2019 Red and White Clover Report

University of Kentucky
College of Agriculture,
Food and Environment
Agricultural Experiment Station

G.L. Olson S.R. Smith, C.D. Teutsch, and J.C. Henning, Plant and Soil Sciences

Introduction

Red clover (Trifolium pratense L.) is a high-quality, short-lived, perennial legume used in mixed or pure stands for pasture, hay, silage, green chop, soil improvement, and wildlife habitat. This species is adapted to a wide range of climatic and soil conditions. Stands of improved varieties generally are productive for 2½ to 3 years, with the highest yields occurring in the year following establishment. Red clover is used primarily as a renovation legume for grass pastures and hay fields. It is a dominant forage legume in Kentucky because it is relatively easy to establish and has high forage quality, vield, and animal acceptance.

White clover (Trifolium repens L.) is a low-growing, perennial pasture legume with white flowers. It differs from red clover in that the stems (stolons) grow along the surface of the soil and can form adventitious roots that lead to the development of new plants. Three types of white clover grow in Kentucky: Dutch, intermediate, and ladino. Dutch white clover, sometimes called "common," naturally occurs in many Kentucky pastures and even lawns. It is generally long lived and reseeds readily, but its small leaves and low growth habit result in low forage yield. The intermediate type is a cross between ladino and Dutch white clover and has been developed to give higher yields than the Dutch type and to persist better than the ladino type under frequent or continuous grazing conditions. Ladino white clover has larger leaves and taller growth than the intermediate and Dutch types and is the highest yielding of the three white clover types but requires rotational grazing to maintain stands. Information on the grazing tolerance of white clover varieties can be found in the 2019 Red and White Clover Grazing Tolerance Report (PR-770).

Yield and persistence of red and white clover varieties are dependent on envi-

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2017, 2018, and 2019.

		- 2	2017				2018			2	019 ²	
	Te	mp	Rainfall		Tei	mp	Raiı	nfall	Te	mp	Raiı	nfall
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	40	+9	6.81	+3.95	31	0	2.01	-0.85	33	+2	4.11	+1.25
FEB	47	+12	4.46	+1.25	45	+10	9.77	+6.56	42	+7	7.64	+4.43
MAR	48	+4	3.34	-1.06	42	-2.	5.16	+0.76	43	-1	3.44	-0.91
APR	62	+7	4.17	+0.29	50	-5	5.52	+1.64	54	+4	4.76	+0.88
MAY	66	+2	7.74	+3.27	73	+9	8.39	+3.92	69	+5	4.49	+0.02
JUN	73	+1	7.68	+4.02	76	+4	6.42	+2.76	73	+1	6.13	+2.47
JUL	76	0	4.49	-0.51	77	+1	6.15	+1.15	79	+3	3.30	-1.70
AUG	74	-1	6.66	+2.73	77	+2	6.45	+2.52	77	+2	2.42	-1.51
SEP	69	+1	4.72	+1.52	74	+6	12.88	+9.68	77	+9	0.18	-3.02
OCT	60	+3	6.06	+3.49	59	+2	6.54	+3.97	61	+4	8.15	+5.58
NOV	47	+2	3.09	-0.30	42	-3	5.64	+2.25				
DEC	35	-1	2.66	-1.32	40	+4	7.35	+3.37				
Total			61.88	+17.33			82.28	+37.73			44.67	+7.49

¹ DEP is departure from the long-term average.

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2019.

			2019 ²	
	Tei	mp	Raiı	nfall
	°F	DEP ¹	IN	DEP
JAN	36	+2	3.62	-0.18
FEB	43	+5	11.14	+6.71
MAR	44	-3	3.34	-1.60
APR	59	0	4.50	-0.30
MAY	69	+2	5.61	+0.05
JUN	73	*2	4.33	+0.48
JUL	77	-1	3.12	-1.17
AUG	76	-1	6.31	+2.30
SEP	75	+4	0.34	-2.99
OCT	59	0	6.36	+3.31
NOV				
DEC				
Total			48.67	+7.21

DEP is departure from the long-term average.
 2019 data is for ten months through October.

ronment and pressure from diseases and insects. The most common red-clover diseases in Kentucky are southern anthracnose, powdery mildew, sclerotinia crown rot, and root rots. For white clover, the most common pests are stolon rots, root rots, and potato leafhoppers. High yield and persistence (as measured by percent stand) are two indications that a specific red or white clover variety is resistant to or tolerant of these pests when grown in Kentucky.

Table 3. Temperature and rainfall at Quicksand, Kentucky, in 2019.

		- :	2019 ²	
	Tei	mp	Rair	nfall
	°F	DEP ¹	IN	DEP
JAN	37	+6	4.93	+1.64
FEB	45	+12	8.15	+4.55
MAR	44	+3	2.15	-2.19
APR	58	+5	2.55	-1.55
MAY	68	+6	3.91	-0.57
JUN	72	+2	8.35	+4.53
JUL	77	+3	6.32	+1.07
AUG	75	+2	1.57	-2.44
SEP	74	+8	0.04	-3.48
OCT	60	+6	6.80	+3.89
NOV				
DEC				
Total			44.77	5.45

¹ DEP is departure from the long-term average.

This report provides current yield and persistence data on red and white clover varieties included in yield trials in Kentucky as well as guidelines for selecting clover varieties. Tables 14 and 15 show a summary of all clover varieties tested in Kentucky for the past 15 years. The UK Forage Extension website at forages. ca.uky.edu contains electronic versions of all forage variety testing reports from Kentucky and surrounding states and a large number of other forage publications.

² 2019 data is for ten months through October.

² 2019 data is for ten months through October.

Important Selection Considerations

Local adaptation and persistence. The variety should be adapted to Kentucky as indicated by superior performance across years and locations in replicated yield trials such as those reported in this publication. High-yielding varieties are generally also those varieties that are the most persistent. Improved red clover generally produces measurable yields for 2½ to 3 years, with the year of establishment considered as the first year. The highest yields occur in the year following establishment. White clover may persist longer than red clover, particularly in wet seasons, and has the ability to reseed even under grazing.

Seed quality. Buy premium-quality seed that is high in germination and purity and free from weed seed. Buy certified seed or proprietary seed of an improved variety. An improved variety is one that has performed well in independent trials, such as those reported in this

publication. Other information on the label will include the test date (which must be within the previous nine months), the level of germination, and percentage of other crop and weed seed. Order seed well in advance of planting time to assure that it will be available when needed.

Description of the Tests

This report summarizes studies at Lexington (two in 2017, two in 2018, and two in 2019), Quicksand (2019) and Princeton (2019). The soils at Lexington (Maury), Princeton (Crider) and Quicksand (Nolin) and are well-drained silt loams. All are well-suited to clover production. Plots were 5 feet by 20 feet in a randomized complete block design with four replications with a harvested plot area of 5 feet by 15 feet.

Seedings were made at 12 pounds per acre for red clover and 3 pounds per acre for white clover into a prepared seedbed using a disk drill. The first cutting in the seeding year was delayed to allow the

clover to completely reach maturity as indicated by full bloom, which generally occurs about 60 to 90 days after seeding. Otherwise, harvests were taken when the clover was in the bud to early flower stage using a sickle-type forage plot harvester. Fresh weight samples were taken at each harvest to calculate percent dry matter production. All tests for establishment, fertility (P, K, and lime based on regular soil tests), and harvest management were managed according to University of Kentucky Cooperative Extension Service recommendations. Weeds were controlled to avoid limiting production and persistence.

Results and Discussion

Weather data for Lexington, Princeton and Quicksand are presented in tables 1 through 3.

Yield data (on a dry matter basis) are presented in tables 4 through 11. Yields are given by cutting date for 2019 and as total annual production. Varieties are

Table 4. Dry matter yields, seedling vigor, and stand persistence of red clover varieties sown September 8, 2017, at Lexington,
Kentucky.

	Seedling		Pe	rcent Sta	nd				Yield (to	ns/acre)		
	Vigor ¹	2017	20	18	20	19	2018		20	19		_
Variety	2017 Oct 12	Oct 12	Mar 14	Sep 25	Mar 22	Oct 11	Total	May 8	Jun 6	Jul 9	Total	2-year Total
Commercial Varieties-A	vailable for	Farm Use	e				,			,		
SS0303RCG	4.1	100	100	99	97	58	4.95	0.78	0.49	0.97	2.24	7.19*
Freedom!	4.1	95	90	88	86	48	4.78	0.85	0.55	0.77	2.17	6.95*
Kenland (certified)	4.3	100	100	99	97	64	4.57	0.90	0.49	0.68	2.06	6.64*
Gallant	3.3	99	99	98	98	65	4.52	0.70	0.45	0.79	1.94	6.46*
FF 9615	4.3	100	100	99	95	63	4.54	0.76	0.40	0.71	1.86	6.40*
Evolve	2.6	93	95	93	91	43	4.45	0.59	0.55	0.70	1.83	6.28*
GA9908	3.4	100	100	94	91	38	4.09	0.58	0.37	0.69	1.64	5.73*
Common O	5.0	100	100	48	14	4	4.10	0.31	0.20	0.31	0.82	4.93
Robust	4.1	100	100	55	12	5	4.17	0.23	0.16	0.25	0.64	4.81
Experimental Varieties												
B-16.0003	4.0	100	100	95	80	40	5.41	0.66	0.44	0.78	1.89	7.30*
GATP1403	3.5	99	99	99	96	53	4.93	0.90	0.56	0.86	2.31	7.24*
RC 0705G	3.9	100	99	99	98	80	4.58	0.79	0.54	0.70	2.03	6.61*
RC 0702	3.9	100	100	100	100	85	4.59	0.78	0.40	0.83	2.01	6.60*
GATP1401	3.9	100	100	98	94	48	4.91	0.54	0.32	0.77	1.62	6.53*
IS-TP12	3.1	99	100	91	74	20	4.51	0.84	0.45	0.66	1.95	6.47*
UK2014(2,4-D)	4.0	100	100	98	93	56	4.38	0.73	0.45	0.83	2.00	6.38*
GATPCP	3.5	99	100	99	98	34	4.39	0.84	0.47	0.61	1.93	6.32*
B-16.5140	4.4	100	100	95	84	45	4.36	0.71	0.39	0.78	1.88	6.24*
GATP1402	3.8	100	100	97	84	30	3.99	0.46	0.31	0.63	1.39	5.39
B-15.3167	4.6	100	100	66	24	5	4.35	0.38	0.21	0.29	0.88	5.23
B-16.4532	4.8	100	100	53	25	12	4.22	0.35	0.27	0.31	0.93	5.15
MVS-R02	4.1	100	100	65	33	23	3.36	0.22	0.27	0.27	0.76	4.12
Mean	3.9	99	99	88	76	42	4.46	0.63	0.40	0.64	1.67	6.13
CV,%	18.8	2	4	12	17	50	17.72	44.44	52.50	43.46	40.90	21.05
LSD,0.05	1.0	3	6	14	18	29	1.12	0.40	0.29	0.40	0.97	1.83

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth.

^{*}Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 5. Dry matter yields, seedling vigor, and stand persistence of red clover varieties sown April 12, 2018, at Lexington, Kentucky.

	Seedling		Percen	t Stand		Yield (tons/acre)						
	Vigor ¹	2018		20	2019		2019					
Variety	2018 May 22	May 22	Sep 25	Mar 22	Oct 11	Total	May 8	Jun 6	Jul 9	Aug 14	Total	Total
Commercial Varieties-Available for Farm Use												
Freedom! MR	4.8	99	100	99	93	4.24	2.18	1.17	0.91	0.27	4.53	8.77*
Kenland (certified)	4.8	99	100	98	81	3.68	2.00	1.13	0.84	0.29	4.25	7.94*
Freedom!	4.5	97	99	99	89	3.31	2.02	1.23	0.98	0.29	4.52	7.84*
SS0303RCG	4.5	99	100	99	83	3.57	1.97	0.83	1.00	0.22	4.03	7.60*
Gallant	4.8	99	99	100	86	3.46	1.91	0.97	1.02	0.24	4.14	7.60*
Common O	4.5	99	92	90	9	2.30	1.86	1.02	0.38	0.06	3.33	5.62
Experimental Varieties												
PAG-37	4.5	98	99	99	79	3.62	2.11	0.81	0.82	0.19	3.93	7.55*
UK2014(2,4-D)	4.5	99	99	99	75	3.31	2.15	0.97	0.85	0.18	4.15	7.46*
Mean	4.6	99	98	98	74	3.44	2.03	1.02	0.85	0.22	4.11	7.55
CV,%	12.5	2	2	2	13	15.51	13.32	19.68	23.37	38.27	15.04	12.36
LSD,0.05	0.8	3	3	3	14	0.78	0.40	0.29	0.29	0.12	0.91	1.37

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth.

Table 6. Dry matter yields, seedling vigor, and stand persistence of red clover varieties sown April 2, 2019, at Lexington, Kentucky.

	Seedling	Percen	t Stand	Yiel	d (tons/a	cre)	
	Vigor ¹ 2019	20	19	2019			
Variety	May 3	May 3	Oct 11	Jul 11	Aug 15	Total	
Commercial Varieties			e				
Freedom! MR	4.9	99	99	1.77	0.95	2.72*	
Freedom!	4.6	99	100	1.56	0.95	2.52*	
CW9901	4.5	100	100	1.48	0.73	2.21*	
Blaze	4.4	100	100	1.55	0.64	2.19*	
Kenland (certified)	4.6	98	99	1.38	0.64	2.02*	
Barduro	4.6	100	100	1.33	0.68	2.01*	
GA9908	4.0	99	99	1.18	0.78	1.96*	
Bigfoot	4.4	100	100	1.26	0.68	1.94*	
Common O	4.9	100	100	1.25	0.55	1.80*	
Gallant	4.6	100	100	1.24	0.56	1.80*	
SS0303RCG	4.1	98	98	1.08	0.55	1.62	
Experimental Varietie	es						
BARTP9	4.8	100	100	1.52	0.78	2.30*	
KY2014(2,4-D)	4.3	99	99	1.49	0.76	2.24*	
BARTP11	4.3	100	100	1.35	0.74	2.09*	
PAG-37	4.6	99	100	1.32	0.69	2.01*	
Mean	4.5	99	99	1.38	0.71	2.1	
CV,%	10.1	1	1	39.67	33.27	33.71	
LSD,0.05	0.6	2	2	0.78	0.34	1.01	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth. *Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

listed in order from highest to lowest total production (for the life of the test). Experimental varieties are listed separately at the bottom of the tables and are not available commercially.

Statistical analyses were performed on all clover data (including experimental varieties) to determine whether the apparent differences are truly due to variety. Varieties not significantly different from the top variety within a column are marked with one asterisk (*). To determine if two varieties are truly different, compare the difference between the two varieties with the least significant difference (LSD) at the bottom of the column. If the difference is equal to or greater than the LSD, the varieties are truly different when grown under the conditions at a given location. The coefficient of variation (CV), which is a measure of the variability of the data, is included for

each column of means. Low variability is desirable, and increased variability within a study results in higher CVs and larger LSDs.

Certified "Kenland" continues to rank near the top of tests. It is important to note yield differences between certified and uncertified Kenland red clover. Most Kenland offered for sale is uncertified and probably common seed falsely advertised as Kenland. Our tests show uncertified

^{*}Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Kenland is significantly lower in yield than certified Kenland. White clover varieties, as managed in these trials, yielded less than most red clover varieties but were more persistent. Again, certified seed of improved varieties is recommended.

In addition to the commercially available varieties and experimental lines, selected "common" red clovers are included in the variety tests for comparison. Common red clover, generally sold as "medium red clover variety unknown," is unimproved red clover with unknown performance. Several years of testing show only about one out of every 10 common red clovers is as productive as certified or proprietary red clovers. In Kentucky, the average yield advantage of seeding improved red clover varieties compared to common types is 3 tons to 6 tons higher of dry matter/acre over the life of the stand.

Tables 12 and 13 show information about proprietors/distributors for all varieties included in the tests discussed in this report. Varieties are listed in alphabetical order, with the experimental varieties at the bottom. Experimental varieties are not available for farm use, but commercial varieties can be purchased from dealerships. Look at data from several years and locations when choosing a variety of clover rather than results from one test year, as is reported in tables 4 through 11. Make sure seed of the variety selected is properly labeled and will be available when needed.

Tables 14 and 15 are summaries of vield data from 2001 to 2019 of commercial varieties that have been entered in the Kentucky trials. The data is listed as a percentage of the mean of the commercial varieties entered in each specific trial. In other words, the mean for each trial is 100 percent—varieties with percentages over 100 yielded better than average, and varieties with percentages less than 100 yielded lower than average. Direct, statistical comparisons of varieties cannot be made using the summary tables 14 and 15, but these comparisons do help to identify varieties for further consideration. Varieties that have performed better than average over many years and at several locations have stable performance; others may have performed

well in wet years or on particular soil types. These details may influence variety choice, and the information can be found in the yearly reports. See the footnotes in tables 14 and 15 to determine which yearly report should be referenced.

Summary

Red and white clovers can be productive components of pasture and hayfields. Choose varieties with proven performance in yield and persistence.

Table 7. Dry matter yields and stand persistence of red clover varieties sown April 3, 2019, at Princeton, Kentucky.

Percent Stand Yield (tons/acre)										
			Yiel		cre)					
	20	19		2019						
Variety	May 7	Nov 4	Jul 2	Aug 14	Total					
Commercial Varieties-Av	ailable f	or Farm l	Jse							
Freedom!	94	92	0.66	0.92	1.58*					
Gallant	92	91	0.46	0.92	1.40*					
Barduro	91	87	0.62	0.68	1.31*					
CW9901	96	83	0.60	0.67	1.27*					
GA9908	93	91	0.50	0.71	1.21*					
Bigfoot	93	93	0.42	0.65	1.07*					
SS0303RCG	93	89	0.38	0.64	1.03*					
Freedom! MR	73	60	0.37	0.55	0.92*					
Kenland (certified)	90	89	0.38	0.48	0.86*					
Common O	93	75	0.32	0.29	0.60					
Experimental Varieties										
BARTP11	95	94	0.59	0.75	1.34*					
BARTP9	93	90	0.57	0.83	1.30*					
KY2014(24D)	91	89	0.48	0.66	1.15*					
Mean	91	86	0.49	0.67	1.15					
CV,%	7	16	49.29	47.43	43.92					
LSD,0.05	9	20	0.35	0.47	0.76					

^{*}Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 8. Dry matter yields, seedling vigor, and stand persistence of red clover varieties sown April 2, 2019, at Quicksand, Kentucky.

	Seedling	Percen	t Stand	Yiel	d (tons/a	cre)	
	Vigor ¹	20	19	2019			
Variety	2019 May 30	May 30	Oct 23	Jun 10	Aug 15	Total	
Commercial Varieties-Av	ailable for	Farm Use	2				
Freedom!	4.1	98	99	1.14	0.85	1.99*	
Freedom! MR	3.8	97	96	0.82	0.65	1.47*	
CW9901	3.5	97	95	0.87	0.55	1.41*	
Barduro	3.3	97	95	0.71	0.56	1.27*	
Kenland (certified)	3.1	97	84	0.72	0.50	1.22	
Common O	3.9	97	85	0.73	0.41	1.15	
GA9908	3.5	93	92	0.50	0.44	0.95	
SS0303RCG	3.0	85	95	0.52	0.42	0.93	
Experimental Varieties							
RC0705G	4.3	98	98	1.08	0.66	1.74*	
BARTP9	3.4	96	96	1.02	0.64	1.66*	
BARTP11	3.5	96	93	0.62	0.53	1.15	
Mean	3.6	96	93	0.78	0.56	1.34	
CV,%	23.6	7	10	40.31	42.01	36.3	
LSD,0.05	1.2	10	13	0.47	0.35	0.73	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth. *Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

The following College of Agriculture publications related to the establishment, management, and harvesting of clover are available at local county Extension offices and are listed in the "Publications" section of the UK Forage website, forages. ca.uky.edu:

- Lime and Fertilizer Recommendations (AGR-1)
- Producing Red Clover Seed in Kentucky (AGR-2)
- Grain and Forage Crop Guide for Kentucky (AGR-18)
- Renovating Hay and Pasture Fields (AGR-26)
- Growing Red Clover in Kentucky (AGR-33)

- Establishing Forage Crops (AGR-64)
- Inoculation of Forage Legumes (AGR-90)
- Growing White Clover in Kentucky (AGR-93)
- Weed Control Strategies for Alfalfa and Other Forage Legume Crops (AGR-148)
- Insect Management Recommendations for Field Crops and Livestock (ENT-17)
- Managing Legume-Induced Bloat in Cattle (ID-186)
- Kentucky Plant Disease Management Guide for Forage Legumes (PPA-10D)
- "Emergency" Inoculation for Poorly Nodulated Legumes (PPFS-AG-F-04)

About the Authors

G.L. Olson is a research specialist, S.R. Smith and J.C. Henning are Extension professors and forage specialists, and C.D. Teutsch is an Extension associate professor and forage specialist.

Table 9. Dry matter yields and stand persistence of white clover varieties sown April 5, 2017, at Lexington, Kentucky.

Percent Stand								Yiel	d (tons/a	cre)		
	2017	20	18	20	19	2017	2018		20	19		3-year
Variety	Sep 29	Mar 20	Sep 25	Apr 1	Oct 23	Total	Total	May 13	Jun 11	Jul 10	Total	Total
Commercial Varieties-Av	ailable f	or Farm	Use									
Bombus	96	95	95	95	94	1.59	3.13	0.80	0.50	0.49	1.79	6.51*
RegalGraze	100	95	89	88	87	1.71	3.12	0.71	0.33	0.46	1.50	6.33*
Kakariki	98	96	95	96	94	1.63	2.99	0.79	0.34	0.34	1.46	6.09*
Will	100	98	96	90	92	1.43	2.93	0.63	0.35	0.41	1.40	5.77*
Brianna	96	96	90	90	80	1.40	2.90	0.65	0.41	0.31	1.37	5.67*
Alice	98	96	94	93	91	1.09	2.89	0.64	0.37	0.35	1.37	5.35*
Patriot	97	89	92	92	91	1.08	2.67	0.86	0.37	0.27	1.50	5.26*
Durana	100	82	79	88	87	1.11	2.50	0.81	0.27	0.32	1.41	5.02
RIVENDEL	96	92	80	79	60	1.10	2.40	0.73	0.41	0.34	1.48	4.98
Experimental Varieties												
ISTR-12	98	98	97	98	93	1.64	3.02	0.88	0.52	0.38	1.77	6.43*
PPG-TR-10	98	85	73	74	76	1.58	2.57	0.73	0.30	0.30	1.32	5.48*
MVS-ROM	98	90	88	83	88	1.30	2.78	0.68	0.30	0.32	1.31	5.39*
NFWC04-29	100	90	84	86	84	1.35	2.36	0.64	0.26	0.31	1.21	4.92
Mean	98	92	89	88	86	1.39	2.79	0.74	0.36	0.35	1.45	5.63
CV,%	3	8	12	12	13	24.83	17.19	22.37	34.42	30.59	21.50	15.66
LSD,0.05	4	11	15	15	15	0.49	0.69	0.24	0.18	0.16	0.45	1.26

^{*}Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 10. Dry matter yields, seedling vigor, and stand persistence of white clover varieties sown April 12, 2018, at Lexington, Kentucky.

	Seedling		Percen	t Stand		Yield (tons/acre)					
	Vigor ¹	2018		20	2019			2019			
Variety	2018 May 22	May 22	Sep 25	Apr 1	Oct 23	Total	May 13	Jun 11	Jul 10	Total	2-year Total
Commercial Variet	ies-Available for I	Farm Use									
Will	3.5	94	100	100	76	2.01	0.74	0.73	0.67	2.14	4.14*
RegalGraze	4.3	98	100	100	98	2.00	0.61	0.73	0.73	2.08	4.07*
Alice	3.3	94	100	100	97	1.59	0.56	0.51	0.51	1.58	3.17*
Patriot	2.0	79	100	100	94	2.03	0.31	0.27	0.52	1.10	3.13
Durana	2.0	81	100	100	98	1.38	0.35	0.38	0.36	1.10	2.48
Experimental Varie	eties	•									
B-17.7032	4.3	99	100	100	89	2.00	0.49	0.63	0.70	1.81	3.82*
Mean	3.2	91	100	100	92	1.84	0.51	0.54	0.58	1.63	3.47
CV,%	13.4	10	0	0	19	16.95	31.66	41.30	29.90	27.71	19.33
LSD,0.05	0.7	14	0	1	27	0.47	0.24	0.34	0.26	0.68	1.01

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous growth.

^{*}Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 11. Dry matter yields, seedling vigor, and stand persistence of white clover varieties sown April 2, 2019, at Lexington, Kentucky.

	Seedling Vigor ¹ 2019		t Stand 19	Yield (tons/acre) 2019
Variety	May 3	_	Oct 23	Jul 10
Commercial Varieties-Av	ailable for l	arm Use		
RegalGraze	5.0	97	97	0.96*
Will	4.3	98	98	0.86*
Alice	4.8	97	97	0.84*
Renovation	4.5	96	95	0.72*
Apis	4.3	97	97	0.70*
Neches	4.3	96	96	0.65*
Rampart	3.5	88	92	0.57*
Patriot	2.5	81	83	0.46
Durana	3.0	91	91	0.32
Companion	2.3	75	88	0.24
Experimental Varieties				
GA178	4.8	95	95	0.74*
B-18.2810	2.9	89	89	0.63*
Mean	3.8	91	93	0.64
CV,%	17.0	4	5	41.39
LSD,0.05	0.9	6	6	0.43

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous

Table 13. Proprietors and clover type information of white clover varieties in current trials in Kentucky.

Variety	Туре	Proprietor/ KY Distributor
Commercial Variet	ties-Available for Farm Us	e
Alice	Intermediate	Barenbrug
Apis	_	Smith Seed
Bombus	Ladino	Hood River Seed
Brianna	Ladino	DLF Pickseed
Companion	Ladino	Oregro Seeds
Durana	Intermediate	Pennington
Kakariki	Ladino	Luisetti Seeds
Neches	Intermediate	Barenbrug
Patriot	Intermediate	Pennington
RegalGraze	Ladino	Cal/West Seed
Rampart	Ladino	Oregro Seeds
Renovation	Intermediate	Smith Seed
RIVENDEL	_	DLF Pickseed
Will	Ladino	Allied Seed, L.L.C.
Experimental Vari	eties ¹	
B-18.2810	Ladino	Blue Moon Farms
GA178	_	Smith Seed
IS-TR-12	Ladino	DLF Pickseed
MVS_ROM	_	Mountain View Seeds
NFWC04-29	Intermediate	Mountain View Seed
PPG-TR-101	_	Mountain View Seed

¹ Experimental varieties are not available commercially, but provide an indication of the progress being made by forage breeding companies.

Table 12. Proprietors of red clover varieties in current trials in Kentucky.

V	Proprietor/ KY
Variety	Distributor
Commercial Varieties-A	
Barduro	Barenbrug USA
Bigfoot	Preferred Alfalfa Genetics
Blaze	Mountain View Seeds
Common O	Public
CW9901	Barenbrug USA
Evolve	DLF Pickseed
Freedom!	Barenbrug USA
Freedom! MR	Barenbrug USA
FF 9615	LaCrosse Seed
Gallant	Turner Seed
GA9908	Smith Seed
Kenland (certified)	KY Agric. Exp. Station
Robust	Blue Moon Farms
SS-0303RCG	Southern States
Experimental Varieties ¹	
BARTP9	Barenbrug USA
BARTP11	Barenbrug USA
B-15.3167	Blue Moon Farms
B-16.0003	Blue Moon Farms
B-16.4532	Blue Moon Farms
B-16.5140	Blue Moon Farms
DLFPS-TP-12	DLF Pickseed
GATP1401	Univ. of GA
GATP1402	Univ. of GA
GATP1403	Univ. of GA
מאוו ואט	
GATPCP	Univ. of GA
GATPCP	Univ. of GA
GATPCP UK2014(2,4-D)	Univ. of GA KY Agric. Exp. Station
GATPCP UK2014(2,4-D) MVS-ROZ	Univ. of GA KY Agric. Exp. Station Mountain View Seeds

¹ Experimental varieties are not available commercially, but provide an indication of the progress being made by forage breeding companies.

growth.
*Not significantly different from the highest numerical value in the column, based on the 0.05 LSD.

Table 14. Summary of Kentucky red clover yield trials 2001-2019 (yield shown as a percentage of the mean of the named commercial varieties in the trial).

								4	exington	ב									Princeton	ton				Õ	Ouicksand	9		Foer	Eden Shale	
		011,2	2 02	03	9	90	80	60	10	Ξ	12	13	14	15 1	16 17	7 03	3 05	Ö	60	1	13	15	01	03	05	00	9	03	08 10	0 Maan ³
Variety	Proprietor	3yr4		_	-	-	-	2yr	3yr	١.	١.	١.	+	-		_	<u> </u>	-	-	\vdash	-	-	2yr	2yr	_	+	_	_	-	_
~	ABI Alfalfa			_		_				-					_	_	-	-							92			-		
Bearcat	Brett Young Seeds													<u> </u>	122		Н													
Cinnamon Plus	Southern States			97		109	112	123	117	94	116	101	86				112	2 102	2 102	2 100	100				103	108	124	_	108	122 108(19)
Common O	Public								96	62	63	84 6	92 7	70 4	49 80	80					67	91					72		7	77 78(12)
Dominion	Seed Research of OR					102											95	5 102	2						93				109	100(5)
Duration	Cisco Co.	86	100																				106							97(3)
Emarwan	Turf-Seed				91			117											106	5			101				66			103(5)
	DLF Pickseed USA													6 86	96 102	72						66								99(4)
FF9615	LaCrosse Seed													-	110 104	4	_													107(2)
Freedom!	Barenbrug USA	127	123	96	118	16	100	108	106	109	66	101	97 1	107 1	114 11	113 110	0 136	6 107	7 116	6 95	107	104	111	103	119	106	115	102	100 14	140 109(30)
Freedom!MR	Barenbrug USA		118	115	102	114	114		112							106	101	_	108	23				94	111		128	118	12	125 112(14)
FSG 402	Allied Seed											104									114									108(2)
FSG 9601	Allied Seed				88																									
Gallant	Turner Seed											101	_	112	10	105					107	101								105(5)
GA9908	Smith Seed														9	93														
	Caudill Seed							84										93	8	_									84 5	59 82(5)
Kenland (cert.)	KY Ag.Exp Sta.	127	139	118	117	117	99	111	66	116	114	109 1	103	105 1	119 10	108 102	12 92	2 113	3 106	6 106	5 115	100	111	88	105	104	123	98	110 13	138 110(30)
Kenland (uncert) Public	Public								82					4	41	_	_	74					83				29		66 92	
Kenton	KY Ag.Exp Sta.	119	109	8	95	112	_									95	5 105	5 112	2 94				93	66	106	86		86		103(15)
Kenway	KY Ag.Exp Sta.	111	134		97	119	118										94	106	5 103	~			100		103	94				107(11)
LS 9703	Lewis Seed										107										98									97(2)
ng Star	Cal/West Seeds																	8											8	90(2)
Plus II	Allied Seed						130																			97				114(2)
Quinequeli	Caudill Seed							92											8	_									2	57 76(3)
	Proseeds Marketing					81												89										_	102	91(3)
Red Gold Plus	Turner Seed	97			95																		86							97(3)
_	Americas Alfalfa	91	104								\dashv	1	1	1	1	\dashv	_	_	\dashv				93							96(3)
Redland Max	ABI Alfalfa				95		\prod				\forall	+	+	+	+	+	\dashv	\perp	\downarrow	\downarrow									+	-
	Blu Moon Farms														7	78			-					J						
Robust II	Seed Research of OR																	110	0										108	109(2)
Rocket	Seed Research of OR																	106											108	107(2)
0	Great Plains	66								1	+		+	1	+	+	-		_				101						+	100(2)
eq	Southern States		9							1			1		-		\dashv	-	4											
	Oregro Seeds						83		101	84																94	66		1	104 94(6)
а	Great Plains	91		\dashv													\dashv						106							99(2)
	Production Service		86	84		79								_		87	98 /	,,							9/			84		85(7)
RCG	Southern States											-	103	109 1	150 117	17					103	104								114(6)
Starfire	Ampac Seed		66																											
T	Cal/West & Ampac						101		111				107					112	-							110	112	_	115 17	111 110(8)
rust 350	ABI Alfalfa					101				1						-	92	٥,	\downarrow						92					95(3)
	DLF-Jenks	23									7	1	1	1	1	\dashv	_	1					96							75(2)
					_	_	_	101						_	_				1	,	_		_	_			•			(0) 0 0 1

Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was harvested three years, so the final report would be "2012 Red and White Clover Report" archived in the UK Forage website at forages.ca.uky.edu.
 Mean only presented when respective variety was included in two or more trials.
 Number of years of data.

Table 15. Summary of Kentucky white clover yield trials 2002-2019 (yield shown as a percentage of the mean of the commercial varieties in the trial).

									. -	Lexinaton	ton							Princ	eton (Ouicksand	Princeton Ouicksand Eden Shale	
			021,2	03	9	90	07	80	60	10		12 13	14	1 15	16	17	18	03	92	03	03	Mean ³
Variety	Туре	Proprietor	3yr4	3yr	3-yr	2-yr	2-yr	3yr	2yr	3yr 3	3yr 2)	2yr 3yr	r 3yr	r 2yr	r 3yr	3yr	2-yr	3yr	3-yr	2yr	2yr	(#trials)
Advantage	Ladino	Allied Seed, L.L.C.		125																	106	116(2)
Alice	Intermediate	Barenbrug USA											105	5 120	0 78	94	93		98			(9)96
Avoca	Dutch	DLF Pickseed				59													82			71(2)
Barblanca	Intermediate	Barenbrug USA		92																		ı
Bombus	Ladino	Hood River									\dashv				11	115						113(2)
Brianna	Ladino	DLF Pickseed													103	100						102(2)
CA ladino	Ladino	Public	100		124													103		86		106(4)
Colt	Intermediate	Seed Research of OR		8		22													114			87(3)
Common	Dutch	Public	100				53			86									78			82(4)
Companion	Ladino	Oregro Seeds						87	94	92												91(3)
Crescendo	Ladino	Cal/West Seeds	105			140													109			118(3)
Crusader II	Intermediate	Allied Seed, L.L.C.								06	50 5	54 75										67(4)
Excel	Ladino	Allied Seed, L.L.C.			100																	ı
Domino	Ladino	Grassland Oregon											87	_								ı
Durana	Intermediate	Pennington		94		94	88	82	85	97	93 8	84 97	68	9 78	66	88	73	87	83	101	95	89(18)
GWC-AS10	Ladino	Ampac Seed									102											ı
Insight	Ladino	Allied Seed, L.L.C.				128																ı
Ivory	Intermediate	Cebeco	96																			1
Ivory II	Intermediate	DLF Pickseed					98			101	127											105(3)
Jumbo	Ladino	Ampac Seed	93								\dashv				_							ı
Il oquinf	Ladino	Ampac Seed									121 10	101		66								107(3)
Kakariki	Ladino	Luisetti Seeds														108						ı
Kopu II	Intermediate	Ampac Seed	97			97	95	95	103	96	80	8										94(8)
KY Select	Intermediate	KY. Agric. Exp. Station									86	95										97(2)
Neches	Intermediate	Barenbrug USA												79								ı
Ocoee	Ladino	Allied Seed, L.L.C.								68	74											82(2)
Patriot	Intermediate	Pennington		103		87	104	113	. 36	117	117 9	99 82	78	88	100	93	92	104	100	86	66	98(18)
Pinnacle	Ladino	Allied Seed, L.L.C.				120													111			116(2)
Rampart	Ladino	Allied Seed, L.L.C.					80	89	6	83												87(4)
Regal	Ladino	Public	66	96	92		125	100	116	118	129 14	147 123			_			107	100	104		112(13)
RegalGraze	Ladino	Cal/West Seeds				127	140	102	103					111	1 119	112	120					117(8)
Renovation	Intermediate	Smith Seed Services											83	85	91							86(3)
Resolute	Intermediate	Southern States				63																ı
RIVENDEL	_	DLF Pickseed													59	88						74(2)
Seminole	Ladino	Saddle Butte Ag. Inc			108	70	79						114	4								93(4)
Super Haifa	Intermediate	Allied Seed, L.L.C.			77																	ı
Tillman II	Ladino	Caudill Seed	103																			ı
WBDX	Dutch	Saddle Butte Ag. Inc									72											ı
Will	Ladino	Allied Seed, L.L.C.	107			162	150	132	107	119 1	137 13	130 123	3 143	3 140	0 140	102	122		136			128(15)
1 Veartrial was established	c actablished																					

Year trial was established.
 Use this summary table as a guide in making variety decisions, but refer to specific yearly reports to determine statistical differences in forage yield between varieties. To find actual yields, look in the yearly report for the final year of each specific trial. For example, the Lexington trial planted in 2010 was harvested three years, so the final report would be "2012 Red and White Clover Report" archived in the UK Forage website at forages.ca.uky.edu.
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University of Kentucky.

College of Agriculture,