



2016 Red and White Clover Report

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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, yield, 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 may 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 pasture 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. Information on the grazing tolerance of white clover varieties can be found in the 2016 Red and White Clover Grazing Tolerance Report (PR-716).

Yield and persistence of red and white clover varieties are dependent on environment and pressure from diseases and insects. The most common red clover diseases in Kentucky are southern an-

thraxnose, 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.

This report provides current yield data on red and white clover varieties included in yield trials in Kentucky as well as guidelines for selecting clover varieties. Tables 15 and 16 show a summary of all clover varieties tested in Kentucky for the past 15 years. The UK Forage Exten-

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2013, 2014, 2015, and 2016.

	2013				2014				2015				2016 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	38	+7	4.50	+1.64	25	-6	2.28	-0.58	32	+1	2.17	-0.69	32	+1	0.80	-2.06
FEB	36	+1	1.78	-1.43	30	-5	5.47	+2.26	26	14	3.08	-0.13	38	+3	6.09	+2.88
MAR	39	-5	5.47	+1.07	39	-5	3.08	-1.32	45	+1	7.34	+2.94	52	+8	4.07	-0.33
APR	55	0	4.46	+0.58	58	+3	5.27	-1.89	57	+2	13.19	+9.31	57	+2	3.97	+0.09
MAY	65	+1	5.23	+0.76	66	+2	5.72	+1.25	69	+5	3.02	-1.45	64	0	9.17	+4.70
JUN	72	0	7.32	+3.66	75	+3	2.93	-0.73	75	+3	8.20	+4.54	76	+4	5.09	+1.43
JUL	72	-4	9.33	+4.33	74	-2	3.18	-1.82	77	+1	10.22	+5.22	79	+3	7.43	+2.43
AUG	72	-3	3.68	-0.25	76	+1	6.53	+2.60	74	-1	3.49	-0.44	79	+4	4.37	+0.44
SEP	67	-1	2.21	-0.99	69	+1	3.63	+0.43	72	+4	3.49	+0.29	74	+6	2.18	-1.02
OCT	55	-2	7.02	+4.45	57	0	5.55	+2.98	59	+2	2.78	+0.21	64	+7	0.37	-2.20
NOV	41	-4	3.06	-0.33	41	-4	2.79	-0.60	51	+6	3.72	+0.33				
DEC	36	0	4.19	+0.21	40	+4	2.47	-1.51	49	+13	8.42	+4.44				
Total							49.4	+4.85			69.12	+24.57			46.54	+6.36

¹ DEP is departure from the long-term average.

² 2016 data is for ten months through October.

Table 2. Temperature and rainfall at Princeton, Kentucky in 2015 and 2016.

	2015				2016 ²			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP
JAN	34	0	1.51	-2.29	35	+1	1.37	-2.43
FEB	28	-10	4.16	-0.27	40	+2	4.23	-0.20
MAR	46	-1	6.83	+1.89	53	+6	7.3	+2.36
APR	60	+1	7.38	+2.58	59	0	4.41	-0.39
MAY	68	+1	3.52	-1.44	64	-3	6.21	+1.25
JUN	76	+1	2.85	-1.00	77	+2	2.18	-1.67
JUL	79	+1	8.83	+4.54	80	+2	12.72	+8.43
AUG	73	-4	2.90	-1.11	78	+2	5.37	+1.36
SEP	71	0	4.82	-2.51	73	+2	1.33	-2.00
OCT	60	+1	4.15	+1.10	65	+6	0.25	-2.80
NOV	53	+6	5.95	+1.32				
DEC	49	+10	6.37	+1.33				
Total			55.27	+4.14			45.37	+3.91

¹ DEP is departure from the long-term average.

² 2016 data is for the ten months through October.

Table 3. Temperature and rainfall at Quicksand, Kentucky in 2016.

	2016 ²			
	Temp		Rainfall	
	°F	DEP ¹	IN	DEP
JAN	32	+1	2.76	-0.53
FEB	40	+7	6.06	+2.46
MAR	51	+10	2.16	-2.18
APR	57	+4	3.53	-0.57
MAY	63	+1	8.04	+3.56
JUN	73	+3	5.51	+1.69
JUL	78	+4	6.52	+1.27
AUG	78	+5	5.59	+1.58
SEP	72	+6	1.05	-2.47
OCT	62	+8	1.01	-1.90
NOV				
DEC				
Total			42.23	+2.91

¹ DEP is departure from the long-term average.

² 2016 data is for the ten months through October.

Table 4. Dry matter yields, seedling vigor and stand persistence of red clover varieties sown August 21, 2013 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ Sep 26, 2013	Percent Stand							Yield (tons/acre)					3-year Total
		2013		2014		2015		2016		2014	2015	2016		
		Sep 26	Apr 1	Oct 6	Apr 6	Oct 15	Mar 23	Jul 21	Total	Total	May 20	Jun 23	Total	
Commercial Varieties-Available for Farm Use														
Kenland (certified)	4.1	100	100	100	97	81	78	20	7.70	3.29	0.95	1.49	2.45	13.44*
FSG 402	4.4	100	100	100	98	93	86	64	7.04	3.54	0.83	1.40	2.23	12.81*
Cinnamon Plus	4.4	100	100	100	95	81	73	39	7.26	3.24	0.85	1.07	1.92	12.41*
Freedom!	4.1	98	100	98	84	39	49	11	7.50	2.92	0.74	1.21	1.96	12.37*
Gallant	3.4	100	100	100	94	89	84	55	7.02	3.39	0.71	1.25	1.96	12.37*
Common O	4.6	100	100	98	89	4	3	3	7.39	2.17	0.16	0.59	0.74	10.30
Experimental Varieties														
RC 0401	4.1	100	100	100	89	61	51	24	7.55	3.41	0.88	1.10	1.98	12.94*
AMP-RC0501	4.1	98	99	99	95	70	53	30	7.10	3.17	0.85	1.03	1.87	12.15*
B-12.2689	3.4	93	97	96	83	18	14	7	7.29	2.91	0.51	1.25	1.75	11.95*
GA 9908	4.4	98	99	98	90	35	30	15	6.62	3.19	0.53	1.00	1.53	11.34
B-12.2688	3.6	96	100	100	95	55	45	18	6.95	2.99	0.54	0.73	1.27	11.21
B-12.3051	3.3	99	99	98	91	55	48	23	6.68	3.00	0.49	0.86	1.34	11.03
GA-Bulldog-S	4.0	100	100	98	93	43	33	9	6.97	2.99	0.32	0.58	0.90	10.86
GA-Bull-AST	3.4	100	100	99	90	40	38	7	6.54	2.90	0.56	0.72	1.28	10.72
Mean	3.9	99	100	99	91	55	49	23	7.12	3.08	0.64	1.02	1.66	11.85
CV,%	17.9	2	1	2	9	31	35	47	8.85	10.79	44.81	38.39	31.63	9.23
LSD,0.05	1.0	3	1	3	12	24	24	15	0.90	0.48	0.41	0.56	0.75	1.57

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

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

sion website at www.uky.edu/Ag/Forage contains electronic versions of all forage variety testing reports from Kentucky and surrounding states and a large number of other forage publications.

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 2013, 2014 and 2015 and one in 2016), Princeton (2015) and Quicksand (2016). The soils at Princeton (Crider), Lexington (Maury) and Quicksand (Nolin) 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.

Table 5. Dry matter yields, seedling vigor and stand persistence of red clover varieties sown April 10, 2014 at Lexington, Kentucky.

Variety	Seedling Vigor ¹ May 27, 2014	Percent Stand						Yield (tons/acre)					3-year Total	
		2014		2015		2016		2014	2015	2016				
		May 27	Oct 6	Apr 6	Oct 15	Mar 23	Jul 21	Total	Total	May 20	Jun 23	Total		
Commercial Varieties-Available for Farm Use														
Starfire II	3.8	88	88	87	53	44	28	2.96	3.51	0.39	0.87	1.26	7.72*	
SS-0303RCG	4.0	91	91	91	64	53	25	2.78	3.72	0.31	0.66	0.97	7.47*	
Kenland (certified)	3.9	88	89	88	33	30	13	2.79	3.65	0.43	0.56	0.99	7.42*	
Cinnamon Plus	4.0	88	89	92	63	54	24	2.88	3.04	0.50	0.66	1.16	7.08*	
Freedom!	4.3	90	91	90	36	28	11	3.06	3.35	0.29	0.33	0.61	7.03*	
Common O	4.8	94	94	93	6	6	8	3.29	2.95	0.09	0.31	0.40	6.65	
Mean	4.1	90	90	90	42	36	18	2.96	3.37	0.33	0.56	0.90	7.23	
CV,%	20.0	6	6	6	42	43	58	14.07	5.23	68.27	39.46	39.07	9.51	
LSD,0.05	1.2	8	8	8	26	23	16	0.63	0.27	0.34	0.34	0.53	1.04	

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

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

Seedings were made at 12 pounds of seed per acre for red clover and 3 pounds of seed 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 and Princeton are presented in tables 1, 2 and 3.

Yield data (on a dry matter basis) are presented in tables 4 through 12. Yields are given by cutting date for 2016 and as total annual production. Varieties are 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

Table 6. Dry matter yields and stand persistence of red clover varieties sown March 31, 2015 at Lexington, Kentucky.

Variety	Percent Stand				Yield (tons/acre)							2-year Total
	2015		2016		2015		2016			Total		
	Jun 12	Oct 15	Mar 18	Sep 27	Total	May 6	Jun 9	Jul 13	Aug 18			
Commercial Varieties-Available for Farm Use												
Freedom!	100	100	99	56	2.05	2.99	2.04	0.91	0.47	6.41	8.46*	
Gallant	100	100	99	91	1.81	3.06	1.73	1.11	0.69	6.59	8.41*	
SS-0303RCG	100	100	100	87	1.50	2.94	1.89	1.47	0.39	6.69	8.18*	
Kenland (certified)	100	100	99	83	1.86	2.79	1.80	1.13	0.45	6.17	8.03*	
Evolve	100	100	99	83	1.86	2.81	1.66	1.14	0.32	5.94	7.79*	
Common O	100	98	97	3	1.70	2.54	1.61	0.26	0.15	4.56	6.27	
Experimental Varieties												
RC 0702	98	99	97	91	1.70	2.82	1.71	1.71	0.46	6.70	8.40*	
KY 2,4-D	100	98	97	65	1.82	2.84	1.61	1.36	0.38	6.20	8.02*	
DLFPS-TP-12	99	99	97	18	1.41	2.84	1.66	0.83	0.35	5.67	7.08	
GO-MOB	98	96	97	6	1.49	2.59	1.52	0.53	0.30	4.94	6.42	
Mean	99	99	98	58	1.72	2.82	1.72	1.05	0.40	5.99	7.71	
CV,%	1	2	2	25	27.52	15.49	12.67	22.31	39.52	11.73	11.67	
LSD,0.05	2	3	3	21	0.69	0.63	0.32	0.34	0.23	1.02	1.30	

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

Table 7. Dry matter yields and stand persistence of red clover varieties sown April 5, 2016 at Lexington, Kentucky.

Variety	Percent Stand		Yield (tons/acre)		
	2016		2016		
	Jun 14	Sep 27	Jul 14	Aug 19	Total
Commercial Varieties-Available for Farm Use					
SS0303RCG	93	79	1.45	0.76	2.21*
Kenland (certified)	87	60	1.16	0.53	1.69*
Bearcat	94	64	1.10	0.53	1.63*
Freedom!	90	58	0.94	0.45	1.39
FF 9615	84	69	0.83	0.49	1.32
Common O	77	28	0.66	0.40	1.05
Evolve	48	33	0.65	0.38	1.03
Kenland (uncertified)	53	13	0.74	0.20	0.95
Experimental Varieties					
IS-TP12	75	28	1.37	0.46	1.83*
GA9908	75	40	1.32	0.41	1.73*
KY2,4-D	94	80	1.27	0.43	1.70*
GATP1412	79	60	1.15	0.43	1.59*
B-15.3167	83	13	1.16	0.26	1.42
RC 0702	81	84	0.90	0.47	1.37
Pramedi	84	16	0.95	0.41	1.37
GATP1413	83	45	0.75	0.38	1.14
B-16.0003	69	43	0.70	0.32	1.03
GATP1501	78	29	0.59	0.26	0.85
Mean	79	47	0.98	0.42	1.40
CV,%	13	28	40.22	38.41	31.53
LSD,0.05	14	18	0.56	0.23	0.63

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

note yield differences between certified and uncertified Kenland red clover. Most Kenland offered for sale is uncertified, and our tests show it 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 of dry matter over the life of the stand.

Tables 13 and 14 summarize information about proprietors, distributors, and yield performance across years and locations for all varieties currently included 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. In tables 13 and 14, an open block indicates the variety was not included in that particular test (labeled at the top of the column), and an “x” in the block means that the variety was included in the test but yielded significantly less than the top-yielding variety in the test. A single asterisk (*) means the variety was not significantly different from the highest-yielding variety based on the 0.05 LSD. 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 12. Make sure seed of the variety selected is properly labeled and will be available when needed.

Tables 15 and 16 are summaries of yield data from 1998 to 2016 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

Table 8. Dry matter yields, seedling vigor and stand persistence of red clover varieties sown August 25, 2015 at Princeton, Kentucky.

Variety	Seedling Vigor ¹ Oct 23, 2015	Percent Stand			Yield (tons/acre)					
		2015		2016	2016					
		Oct 23	Mar 22	Sep 23	May 4	Jun 7	Jul 20	Aug 23	Total	
Commercial Varieties-Available for Farm Use										
Freedom!	4.5	100	98	97	3.08	1.61	1.91	0.70	7.30*	
Kenland (certified)	4.4	100	100	99	3.01	1.55	1.70	0.77	7.04*	
Common O	5.0	100	100	97	3.04	1.55	1.50	0.69	6.78*	
SS-0303RC	4.1	100	98	100	2.85	1.34	1.97	0.62	6.77*	
Gallant	4.5	100	99	100	2.81	1.46	1.92	0.45	6.64*	
Evolve	3.8	100	99	100	2.40	1.36	1.99	0.53	6.28*	
Experimental Varieties										
DLFPS-TP-12	3.9	100	99	100	2.96	1.58	1.80	0.71	7.04*	
KY2,4-D	3.6	100	99	96	3.09	1.56	1.77	0.47	6.89*	
RC 0702	4.3	100	98	100	2.47	1.42	1.73	0.57	6.19	
GO-MOB	3.4	100	98	94	2.60	1.49	1.59	0.45	6.14	
Mean	4.1	100	99	98	2.83	1.49	1.79	0.60	6.71	
CV,%	13.0	0	1	3	15.58	16.69	17.89	24.17	11.33	
LSD,0.05	0.8	0	2	4	0.64	0.36	0.33	0.21	1.10	

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

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

Table 9. Dry matter yields and stand persistence of red clover varieties sown March 30, 2016 at Quicksand, Kentucky.

Variety	Percent Stand		Yield (tons/acre)		
	2016		2016		
	Jun 3	Nov 3	Jul 11	Sep 13	Total
Commercial Varieties-Available for Farm Use					
Kenland	100	95	1.29	1.04	2.34*
SS-0303RCG	99	97	1.31	0.92	2.23*
Freedom!	99	93	1.34	0.85	2.19*
Bearcat	99	96	1.16	0.85	2.01*
Evolve	89	76	0.72	0.78	1.51
Common O	100	39	0.96	0.33	1.28
Experimental Varieties					
GO-MOB	97	50	0.77	0.48	1.26
Pramedi	99	29	0.67	0.18	0.85
Mean	98	72	1.03	0.68	1.71
CV,%	3	17	24.99	36.46	23.63
LSD,0.05	4	18	0.38	0.36	0.59

*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 August 21, 2013 at Lexington, Kentucky. (See Table 14 for designation of ladino, intermediate or dutch type varieties.)

Variety	Seedling Vigor ¹ Oct 3, 2013	Percent Stand							Yield (tons/acre)					3-year Total	
		2013		2014		2015		2016		2014	2015	2016			
		Oct 3	Apr 1	Oct 6	Apr 6	Oct 15	Mar 23	Jul 27	Total	Total	May 20	Jun 27	Total		
Commercial Varieties-Available for Farm Use															
Will	3.8	73	82	97	93	81	73	85	3.40	1.13	0.29	0.28	0.58	5.11*	
Regal	4.0	86	93	93	63	40	40	70	3.66	0.81	0.37	0.26	0.62	5.09*	
Durana	2.1	68	69	95	93	81	75	73	2.40	0.93	0.31	0.39	0.70	4.04	
Patriot	1.8	49	61	93	84	60	68	68	2.01	0.85	0.27	0.28	0.56	3.42	
Crusader II	3.3	85	10	84	65	50	43	58	1.63	0.80	0.33	0.34	0.67	3.10	
Experimental Varieties															
GA-178	3.3	69	78	93	73	54	49	73	3.08	1.04	0.36	0.33	0.69	4.81*	
VS-41730	3.6	85	92	93	70	28	33	40	2.64	0.70	0.22	0.19	0.41	3.75	
XLFWC1	3.3	73	30	95	81	55	56	78	1.67	0.84	0.41	0.26	0.67	3.19	
Mean	3.1	73	64	93	78	56	54	68	2.56	0.89	0.32	0.29	0.61	4.06	
CV,%	24.5	27	32	6	14	32	30	21	15.61	24.30	39.94	50.04	36.87	12.65	
LSD,0.05	1.1	29	31	9	16	27	24	21	0.59	0.32	0.19	0.21	0.33	0.76	

¹ Vigor score based on a scale of 1 to 5 with 5 being the most vigorous seedling 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 10, 2014 at Lexington, Kentucky. (See Table 14 for designation of ladino, intermediate or dutch type varieties.)

Variety	Seedling Vigor ¹ May 27, 2014	Percent Stand						Yield (tons/acre)					3-year Total
		2014		2015		2016		2014	2015	2016			
		May 27	Oct 6	Apr 6	Oct 15	Mar 23	Sep 29	Total	Total	May 20	Jun 27	Total	
Commercial Varieties-Available for Farm Use													
Will	4.8	90	99	89	48	58	58	1.29	1.09	0.59	0.67	1.26	3.64*
Seminole	4.3	89	98	54	80	64	46	1.13	0.62	0.52	0.63	1.15	2.90*
Alice	3.5	76	73	84	53	40	25	0.83	0.63	0.63	0.57	1.20	2.66
Durana	2.8	63	87	70	33	38	33	0.87	0.40	0.51	0.48	0.99	2.27
Domino	3.0	76	93	13	53	40	25	0.93	0.31	0.44	0.53	0.97	2.22
Renovation	2.8	85	92	66	33	31	31	0.76	0.52	0.36	0.48	0.84	2.12
Patriot	2.8	66	94	71	28	20	23	0.77	0.46	0.38	0.38	0.76	1.99
Experimental Varieties													
NFWC04-29	3.4	86	94	80	28	18	16	1.31	0.75	0.37	0.41	0.79	2.84*
GO-FD	3.3	75	91	14	30	18	16	0.89	0.32	0.45	0.36	0.81	2.02
VS-41730	3.5	79	93	56	11	9	7	1.08	0.26	0.24	0.32	0.56	1.91
Mean	3.4	79	91	60	39	33	28	0.99	0.54	0.45	0.48	0.93	2.46
CV,%	21.2	13	16	19	52	49	48	25.00	36.69	39.77	50.31	37.88	23.69
LSD,0.05	1.0	15	21	17	30	24	20	0.36	0.29	0.26	0.35	0.51	0.84

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

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

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 15 and 16, 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 15 and 16 to determine to which yearly report to refer.

Summary

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

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, www.uky.edu/Ag/Forage:

- Lime and Fertilizer Recommendations (AGR-1)
- Producing Red Clover Seed in Kentucky (AGR-2)

Table 12. Dry matter yields and stand persistence of white clover varieties sown March 31, 2015 at Lexington, Kentucky. (See Table 14 for designation of ladino, intermediate or dutch type varieties.)

Variety	Percent Stand				Yield (tons/acre)					2-year Total
	2015		2016		2015	2016				
	Jun 12	Oct 15	Mar 23	Sep 27	Total	May 20	Jun 27	Aug 8	Total	
Commercial Varieties-Available for Farm Use										
Will	100	100	99	84	0.71	0.90	0.81	0.68	2.39	3.10*
Alice	98	99	98	90	0.57	0.70	0.80	0.59	2.09	2.66*
RegalGraze	100	98	94	79	0.64	0.69	0.59	0.54	1.82	2.45
Jumbo II	99	97	83	76	0.55	0.53	0.61	0.49	1.63	2.18
Patriot	93	91	83	76	0.45	0.56	0.43	0.50	1.49	1.95
Renovation	98	97	93	88	0.49	0.38	0.62	0.38	1.38	1.88
Neches	97	96	70	58	0.48	0.50	0.49	0.29	1.27	1.75
Durana	95	94	89	59	0.44	0.58	0.49	0.21	1.28	1.73
Experimental Varieties										
GA-178	99	99	90	84	0.63	0.53	0.85	0.50	1.88	2.52*
AL 9701	100	99	93	88	0.61	0.73	0.60	0.57	1.91	2.51*
PPG-TR-102	97	94	73	69	0.45	0.43	0.49	0.31	1.23	1.67
SSS-SH1	100	99	21	20	0.58	0.09	0.17	0.19	0.45	1.03
Mean	98	97	82	72	0.55	0.55	0.58	0.44	1.57	2.12
CV,%	2	4	21	23	19.66	35.44	38.36	40.59	25.85	19.71
LSD,0.05	3	5	24	24	0.16	0.28	0.32	0.25	0.58	0.60

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

- 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 Recommenda-

tions for Field Crops and Livestock (ENT-17)

- Managing Legume-Induced Bloat in Cattle (ID186)
- Kentucky Plant Disease Management Guide for Forage Legumes (PPA-10D)
- “Emergency” Inoculation for Poorly Nodulated Legumes (PPFS-AG-F-04)

About the Authors

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Table 13. Performance of red clover varieties across years and locations in Kentucky.

Variety	Proprietor/ KY Distributor	Lexington									Princeton	Quicksand
		2013 ¹			2014			2015		2016	2015	2016
		14 ²	15	16	14	15	16	15	16	16	16	16
Commercial Varieties-Available for Farm Use												
Bearcat	Brett Young Seeds									*		*
Cinnamon Plus	Southern States	*	*	*	*	x ³	*					
Common O	Public	*	x	x	*	x	x	*	x	x	*	x
Evolve	DLF Pickseed USA							*	*	x	*	x
Freedom!	Barenbrug USA	*	x	*	*	x	x	*	*	x	*	*
FF 9615	LaCrosse Seed									x		
FSG 402	Farm Science Genetics	*	*	*								
Gallant	Turner Seed	*	*	*				*	*		*	
Kenland (certified)	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	*	*
Kenland (uncertified)	Public									x		
SS-0303RCG	Southern States				*	*	*	*	*	*	*	*
Starfire II	Ampac Seed				*	*	*					
Experimental Varieties												
AMP RC0501	Ampac Seed	*	*	*								
B-12.2688	Blue Moon Farms	*	x	x								
B-12.2689	Blue Moon Farms	*	x	*								
B-12.3051	Blue Moon Farms	x	x	x								
B-15.3167	Blue Moon Farms									x		
B-16.0003	Blue Moon Farms									x		
DLFPS-TP-12	DLF Pickseed USA							*	x	*	*	
GA-Bull-AST	Univ. of GA	x	x	x								
GA-Bulldog-S	Univ. of GA	*	x	x								
GA 9908	Univ. of GA	x	*	x						*		
GATP1412	Univ. of GA									*		
GATP1413	Univ. of GA									x		
GATP1501	Univ. of GA									x		
GO-MOB	Grassland Oregon							*	x		x	x
KY 2,4-D	KY Agric. Exp. Station							*	*	*	*	
Pramedi	Hood River Seed									x		x
RC 0401	Allied Seed	*	*	*								
RC 0702	DLF Pickseed USA							*	*	x	x	

¹ Establishment year.

² Harvest year.

³ x in the box indicates the variety was in the test but yielded significantly less than the top variety in the test. Open boxes indicate the variety was not in the test.

*Not significantly different from the top-ranked red clover variety in the test.

Table 14. Performance of white clover varieties across years at Lexington, Kentucky.

Variety	Type	Proprietor/KY Distributor	2013 ¹			2014			2015	
			14 ²	15	16	14	15	16	15	16
			Commercial Varieties-Available for Farm Use							
Alice	Intermediate	Barenbrug				x ³	x	*	*	*
Crusader II	Intermediate	Allied Seed, L.L.C.	x	x	*					
Domino	Ladino	Grassland Oregon				*	x	*		
Durana	Intermediate	Pennington	x	*	*	x	x	*	x	x
Jumbo II	Ladino	Ampac Seed Co							*	x
Neches	Intermediate	Barenbrug							x	x
Patriot	Intermediate	Pennington	x	*	*	x	x	*	x	x
Regal	Ladino	Public	*	*	*					
RegalGraze	Ladino	Cal/West Seed							*	*
Renovation	Intermediate	Smith Seed				x	x	*	x	x
Seminole	Ladino	Caudill Seed				*	x	*		
Will	Ladino	Allied Seed, L.L.C.	*	*	*	*	*	*	*	*
Experimental Varieties										
AL 9701	—	Barenbrug							*	*
GA-178	Ladino	Univ. of Georgia	*	*	*				*	*
GO-FD	—	Grassland Oregon				x	x	*		
NFWC04-29	—	Noble Foundation				*	x	*		
PPG-TR-102	—	Mountain View Seed							x	x
SSS-SH1	Ladino	Smith Seed							x	x
VS-41730	Ladino	Turner Seed	x	x	*	*	x	x		
XLFWC1	—	ProSeeds Marketing	x	*	*					

¹ Establishment year.

² Harvest year.

³ x in the box indicates the variety was in the test but yielded significantly less than the top variety in the test.

Open boxes indicate the variety was not in the test.

*Not significantly different from the top-ranked white clover variety in the test.

Table 16. Summary of Kentucky white clover yield trials 2002-2016 (yield shown as a percentage of the mean of the commercial varieties in the trial).

Variety	Type	Proprietor	Lexington												Princeton		Quicksand		Eden Shale		Mean ³ (#trials)
			02/2 3yr ⁴	03 3yr	04 3-yr	06 2-yr	07 2-yr	08 3yr	09 2yr	10 3yr	11 3yr	12 2yr	13 3yr	14 3yr	15 2yr	03 3-yr	05 3-yr	03 2yr	03 2yr		
Advantage	Ladino	Allied Seed, L.L.C.	125																	106	116(2)
Alice	Intermediate	Barenbrug USA										105	120			86					104(3)
Avoca	Dutch	DLF International Seeds			59											82					71(2)
Barblanca	Intermediate	Barenbrug USA	92																		-
CA ladino	Ladino	Public	100	124														98			106(4)
Colt	Intermediate	Seed Research of OR	90		57												103				87(3)
Common	Dutch	Public	100			53			98										78		82(4)
Companion	Ladino	Oregro Seeds					87	94	92												91(3)
Crescendo	Ladino	Cal/West Seeds	105		140																118(3)
Crusader II	Intermediate	Allied Seed, L.L.C.							90	50	54	75									67(4)
Excel	Ladino	Allied Seed, L.L.C.		100																	-
Domino	Ladino	Grassland Oregon										87									-
Durana	Intermediate	Pennington	94			94	88	82	85	97	84	97	89	87	83	101					90(15)
GWC-AS10	Ladino	Ampac Seed								102											-
Insight	Ladino	Allied Seed, L.L.C.			128																-
Ivory	Intermediate	Cebeco	96																		-
Ivory II	Intermediate	DLF International Seeds								101	127										105(3)
Jumbo	Ladino	Ampac Seed	93																		-
Jumbo II	Ladino	Ampac Seed									121	101									107(3)
Kopu II	Intermediate	Ampac Seed	97			97	95	95	103	96	80	90									94(8)
KY Select	Intermediate	KY Agric. Exp. Station									98	95									97(2)
Neches	Intermediate	Barenbrug USA										79									-
Ocoee	Ladino	Allied Seed, L.L.C.								89	74										82(2)
Patriot	Intermediate	Pennington		103		87	104	113	95	117	117	99	82	78	88	104	100	98	99	99(15)	
Pinnacle	Ladino	Allied Seed, L.L.C.				120										111					116(2)
Rampart	Ladino	Allied Seed, L.L.C.					80	89	97	83											87(4)
Regal	Ladino	Public	99	96	92	125	100	116	118	129	147	123				107	100	104			112(13)
RegalGraze	Ladino	Cal/West Seeds				127	140	102	103				111								117(5)
Resolute	Intermediate	Southern States			63																-
Renovation	Intermediate	Smith Seed Services																			84(2)
Seminole	Ladino	Saddle Butte Ag. Inc			108	70	79														93(4)
Super Halfa	Intermediate	Allied Seed, L.L.C.			77																-
Tillman II	Ladino	Caudill Seed	103																		-
WBDX	Dutch	Saddle Butte Ag. Inc								72											-
Will	Ladino	Allied Seed, L.L.C.	107			162	150	132	107	119	137	130	123	143	140	136					132(12)

1 Year trial was established.

2 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 3 years, so the final report would be "2012 Red and White Clover Report" archived in the KY Forage website at <www.uky.edu/Ag/Forage>.

3 Mean only presented when respective variety was included in two or more trials.

4 Number of years of data.