

2012 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. 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 2012 Red and White Clover Grazing Tolerance Report (PR-650).

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 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 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 14 and 15 show a summary of all clover varieties tested in Kentucky for the past 10-plus years. The UK Forage Extension Web site 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

Table 1. Temperature and rainfall at Lexington, Kentucky, in 2010, 2011, and 2012.

	2010				2011				2012 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	29	-2	2.40	-0.46	29	-2	2.10	-0.76	38	+7	4.80	+1.94
FEB	29	-6	1.38	-1.83	39	+4	6.34	+3.13	40	+5	5.39	+2.18
MAR	47	+3	1.05	-3.35	47	+3	4.76	+0.36	56	+12	5.64	+1.24
APR	59	+4	2.74	-1.14	58	+3	12.36	+8.48	56	+1	3.26	-0.62
MAY	67	+3	7.84	+3.37	64	0	6.72	+2.25	69	+5	4.02	-0.45
JUN	76	+4	4.61	+0.95	74	+2	2.61	-1.05	73	+1	2.42	-1.24
JUL	78	+2	5.49	+0.49	80	+4	6.29	1.29	81	+5	2.50	-2.50
AUG	78	+3	1.54	-2.39	75	0	2.89	-1.04	75	0	1.68	-2.25
SEP	71	+3	1.14	-2.06	66	-2	5.52	+2.32	67	-1	6.40	+3.20
OCT	59	+2	1.22	-1.35	55	-2	4.10	+1.53	55	-2	2.00	-0.57
NOV	47	+2	4.58	+1.19	50	+5	9.53	+6.14				
DEC	28	-8	2.15	-1.93	41	+5	5.58	+1.60				
Total			36.14	-8.41			68.80	+24.25			38.11	+0.93

¹ DEP is departure from the long-term average.

² 2012 data is for the ten months through October.

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 2010 and two in 2011), Princeton (2011), Quicksand (2010), and Eden Shale (2010). Red and white clover trials were planted in the spring of 2012 in Lexington but did not establish well so they were replanted in August of 2012. The soils at Princeton (Crider), Lexington (Maury), Eden Shale (Nicholson), 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.

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

Table 2. Temperature and rainfall at Princeton, Kentucky, in 2011 and 2012.

	2011				2012 ²			
	Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP
JAN	32	-2	2.35	-1.45	40	+6	3.01	-0.79
FEB	40	+2	5.71	+1.28	54	+6	1.73	-2.70
MAR	50	+3	5.54	+0.60	60	+13	3.27	-1.67
APR	61	+2	16.15	+11.35	60	+1	0.62	-4.18
MAY	66	-1	7.22	+2.26	71	+4	1.36	-3.60
JUN	77	+2	4.60	+0.75	74	-5	2.38	-1.47
JUL	81	+3	2.98	-1.31	83	+5	1.40	-2.89
AUG	77	0	3.95	-0.06	77	0	4.27	+0.26
SEP	68	-3	3.86	+0.53	69	-2	5.45	+1.82
OCT	57	-2	1.35	-1.70	57	-2	2.94	-0.11
NOV	51	+4	9.12	+4.49				
DEC	42	+3	6.13	+1.09				
Total			68.96	+17.83			26.13	-15.33

¹ DEP is departure from the long-term average.

² 2012 data is for the ten months through October.

calculate percent dry matter production. All tests for establishment, fertility, 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, Quicksand, and Eden Shale are presented in tables 1 through 4.

Yield data (on a dry matter basis) are presented in tables 5 through 11. Yields are given by cutting date for 2012 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 note yield differences between certified

Table 3. Temperature and rainfall at Quicksand, Kentucky, in 2010, 2011 and 2012.

	2010				2011				2012 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	31	0	4.09	+0.80	32	+1	2.63	-0.66	40	+9	4.60	+1.31
FEB	32	-1	2.82	-0.77	42	+9	3.94	+0.34	42	+9	3.49	-0.16
MAR	47	+6	2.38	-1.96	48	+7	4.66	+0.32	57	+16	3.34	-1.40
APR	60	+7	2.64	-1.46	60	+7	11.65	+7.55	56	+3	2.02	-2.08
MAY	67	+5	6.00	+1.52	65	+3	6.49	+2.01	69	+7	4.29	-0.19
JUN	76	+6	4.26	+0.44	73	+3	3.73	-0.09	71	+1	0.82	-3.00
JUL	77	+3	3.06	-2.19	78	+4	4.92	-0.33	78	+4	5.20	+0.45
AUG	77	+4	3.77	-0.24	75	+2	4.09	+0.08	74	+1	3.82	-0.19
SEP	69	+3	0.63	-2.89	67	+1	3.52	0	67	+1	10.05	+6.53
OCT	57	+3	1.33	-1.58	55	+1	4.16	+1.25	55	+1	4.21	+1.30
NOV	47	+5	3.88	0	50	+8	5.15	+1.27				
DEC	29	-4	3.15	-0.99	42	+9	4.25	+0.11				
Total			38.02	-9.32			59.19	+11.85			42.29	+2.97

¹ DEP is departure from the long-term average.

² 2012 data is for the ten months through October.

Table 4. Temperature and rainfall at Eden Shale, Kentucky, in 2010, 2011 and 2012.

	2010				2011				2012 ²			
	Temp		Rainfall		Temp		Rainfall		Temp		Rainfall	
	°F	DEP ¹	IN	DEP	°F	DEP	IN	DEP	°F	DEP	IN	DEP
JAN	28	-2	2.38	-0.16	28	-2	1.68	-0.86	37	+7	4.42	+1.88
FEB	29	-4	1.78	-0.97	38	+5	5.32	+2.57	40	+7	2.26	-0.49
MAR	47	+4	2.92	-1.80	46	+3	3.47	-1.25	56	+13	2.31	-2.41
APR	59	+5	2.65	-1.50	58	+4	12.92	+8.77	55	+1	2.66	-1.49
MAY	66	+3	6.83	+2.43	63	0	6.96	+2.55	68	+5	6.24	+1.83
JUN	76	+5	7.64	+3.87	72	+1	5.91	+2.14	71	0	0.92	-2.80
JUL	77	+2	3.00	-1.53	79	+4	2.22	--2.31	79	+4	4.17	-0.36
AUG	77	+3	0.78	-2.95	75	+1	2.61	-1.12	74	0	4.15	+0.42
SEP	71	+3	0.21	-2.98	65	-3	5.5	+2.31	66	-2	5.15	+1.96
OCT	59	+2	1.18	-1.81	55	-2	3.61	+0.62	54	-3	2.38	-0.61
NOV	46	+1	3.80	+0.25	50	+5	6.67	+3.12				
DEC	27	-8	1.97	+0.46	40	+5	4.56	+1.13				
Total			35.14	-8.62			61.42	+17.67			34.71	-2.07

¹ DEP is departure from the long-term average.

² 2012 data is for the ten months through October.

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 better red clovers compared to common types is 3 to 6 tons of dry matter over the life of the stand.

Tables 12 and 13 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 12 and 13, 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 5 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 yield data from 1998 to 2012 of commercial varieties that have been entered in the Kentucky trials. The data is listed

Table 5. Dry matter yields and stand persistence of red clover varieties sown April 6, 2010, at Lexington, Kentucky.

Variety	Percent Stand						Yield (tons/acre)						
	2010		2011		2012		2010 Total	2011 Total	2012			3-year Total	
	Aug 8	Oct 15	Mar 22	Oct 4	Mar 21	Aug 23			Apr 27	May 24	Jun 21		Total
Commercial Varieties—Available for Farm Use													
Cinnamon Plus	92	84	93	88	87	10	0.83	2.73	1.04	0.49	0.29	1.82	5.80*
Freedom! MR	96	97	95	83	85	23	0.92	2.67	0.93	0.47	0.30	1.70	5.55*
Starfire II	98	96	92	67	80	14	0.99	2.62	0.93	0.39	0.24	1.56	5.54*
Freedom!	94	88	96	75	82	14	0.97	2.56	0.71	0.39	0.24	1.33	5.27*
Rustler	92	92	93	52	67	10	0.68	2.16	1.06	0.42	0.26	1.74	5.03*
Kenland (certified)	88	78	90	78	80	14	0.66	2.46	1.11	0.37	0.23	1.71	4.94*
Common O	95	92	88	68	60	11	0.71	2.44	0.78	0.34	0.16	1.27	4.80*
Kenland (uncertified)	69	45	68	42	33	8	0.52	2.15	0.69	0.26	0.13	1.08	4.06
GLB09	93	92	89	50	47	6	0.62	2.14	0.58	0.16	0.11	0.85	3.78
Experimental Varieties													
KY Tetraploid	95	94	98	87	87	22	0.78	3.18	1.08	0.64	0.39	2.11	6.51*
CW 30091	97	94	98	73	85	20	0.81	2.88	0.93	0.41	0.26	1.60	5.73*
CW 202	88	77	97	77	80	16	0.84	2.48	1.15	0.46	0.26	1.87	5.45*
B-9.2013	94	93	87	75	72	10	0.94	2.68	0.90	0.35	0.21	1.46	5.35*
AMP-116	98	94	82	70	73	10	0.94	2.30	1.03	0.41	0.20	1.63	5.24*
Mean	92	87	90	70	73	13	0.80	2.53	.92	0.40	0.23	1.55	5.22
CV,%	8	18	11	28	25	56	56.59	19.21	36.92	32.70	37.57	33.05	21.65
LSD,0.05	10	22	16	33	31	11	0.65	0.82	0.49	0.19	0.13	0.73	1.90

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

Table 6. Dry matter yields and stand persistence of red clover varieties sown April 7, 2010, at Quicksand, Kentucky.

Variety	Percent Stand					Yield (tons/acre)						
	2010		2011		2012	2010 Total	2011 Total	2012				3-year Total
	Oct 10	Mar 29	Nov 8	Mar 20	Nov 1			Apr 24	Jun 8	Jul 17	Total	
Commercial Varieties—Available for Farm Use												
Freedom! MR	98	99	65	68	4	1.44	3.99	0.36	1.67	0.65	2.67	8.11
Cinnamon Plus	95	95	49	60	4	1.40	3.44	0.58	1.88	0.64	3.10	7.84
Kenland (certified)	95	95	55	70	2	1.28	3.61	0.53	1.89	0.46	2.87	7.78
Freedom!	99	100	64	48	2	1.31	3.90	0.22	1.47	0.38	2.07	7.29
Starfire II	99	99	65	40	5	1.52	3.52	0.18	1.40	0.57	2.15	7.19
Rustler	98	99	35	40	1	1.38	3.24	0.18	1.25	0.26	1.68	6.30
Emarwan	98	99	43	38	0	1.17	2.97	0.26	1.47	0.39	2.13	6.28
Wildcat	99	98	23	15	3	1.26	3.38	0.11	1.16	0.31	1.58	6.22
Common O	86	86	9	17	0	0.91	2.26	0.10	0.94	0.13	1.17	4.56
Kenland (uncertified)	83	86	8	8	0	0.81	2.97	0.07	0.35	0.05	0.47	4.25
GLB09	82	82	7	7	1	0.82	2.67	0.05	0.26	0.09	0.40	3.89
Experimental Varieties												
KY Tetraploid	99	100	90	74	2	1.54	4.98	0.63	2.01	0.80	3.45	9.97*
CW 30091	100	99	41	37	1	1.15	2.98	0.22	1.44	0.38	2.04	6.16
CW 202	89	96	43	55	1	1.08	3.37	0.15	0.94	0.29	1.39	5.83
B-9.2013	96	98	29	30	2	1.08	2.88	0.13	1.10	0.36	1.59	5.55
AMP-116	100	100	16	13	0	1.16	2.41	0.07	0.59	0.06	0.73	4.30
Mean	95	96	40	38	2	1.21	3.29	0.23	1.22	0.36	1.82	6.33
CV,%	8	7	38	26	117	21.00	16.10	54.68	27.17	35.79	26.37	13.81
LSD,0.05	11	10	22	16	3	0.36	0.75	0.19	0.49	0.19	0.70	1.28

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

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 to which yearly report to refer.

Table 7. Dry matter yields, seedling vigor, and stand persistence of red clover varieties sown April 15, 2010, at Eden Shale Farm near Owenton, Kentucky.

Variety	Seedling Vigor ¹ May 20, 2010	Percent Stand						Yield (tons/acre)						
		2010		2011		2012	2010 Total	2011 Total	2012				3-year Total	
		May 20	Oct 14	Mar 22	Sep 21	Mar 20			Oct 17	May 2	Jun 5	Jul 11		Total
Commercial Varieties—Available for Farm Use														
Freedom!	3.5	95	87	91	86	81	35	0.95	3.13	1.00	1.22	0.36	2.58	6.65*
Kenland (certified)	2.3	91	93	92	85	83	55	1.02	3.11	0.99	1.10	0.31	2.40	6.53*
Freedom! MR	3.3	90	91	89	89	89	59	1.00	2.56	0.91	1.09	0.34	2.35	5.91*
Cinnamon Plus	3.4	91	97	93	91	88	55	0.83	2.80	0.88	0.98	0.30	2.15	5.78*
Starfire II	2.9	94	90	78	75	70	49	0.80	2.59	0.87	0.72	0.28	1.87	5.27*
Rustler	2.8	87	88	74	58	55	11	0.96	2.32	0.85	0.65	0.16	1.66	4.94*
Kenland (uncertified)	1.6	71	68	76	45	40	4	0.86	2.31	0.63	0.46	0.11	1.20	4.37
Common O	3.4	93	88	80	48	39	8	0.65	2.02	0.59	0.29	0.09	0.96	3.64
GLB09	4.1	98	93	87	36	34	6	0.66	2.11	0.22	0.52	0.06	0.80	3.57
Juliet	3.4	97	90	94	44	37	3	0.57	1.72	0.24	0.22	0.03	0.49	2.78
Quinequeli	3.0	97	89	55	31	31	4	0.86	1.18	0.35	0.25	0.07	0.67	2.70
Experimental Varieties														
KY Tetraploid	4.6	97	95	95	93	88	49	0.90	2.87	0.85	0.92	0.39	2.16	5.93*
CW202	2.5	92	89	87	84	79	39	0.73	3.02	0.91	0.86	0.30	2.07	5.82*
CW30091	3.8	95	93	80	73	69	31	0.91	2.52	0.99	0.77	0.24	1.99	5.42*
B-9.2013	3.3	95	93	89	79	63	28	0.74	2.81	0.81	0.77	0.22	1.80	5.35*
AMP-116	3.6	96	89	48	25	24	4	0.75	1.00	0.37	0.29	0.05	0.72	2.47
Mean	3.2	92	90	82	65	61	27	0.82	2.38	0.72	0.69	0.21	1.62	4.82
CV,%	31.0	7	7	20	36	34	30	25.78	34.13	52.61	50.32	66.70	45.16	32.83
LSD,0.05	1.4	9	9	23	33	29	28	0.30	1.16	0.54	0.50	0.20	1.04	2.25

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 8. Dry matter yields and stand persistence of red clover varieties sown April 7, 2011, at Lexington, Kentucky.

Variety	Percent Stand				2011 Total	Yield (tons/acre)				2-year Total
	2011		2012			2012				
	Jul 18	Oct 4	Mar 21	Oct 12		Apr 27	May 24	Jun 21	Total	
Commercial Varieties—Available for Farm Use										
Kenland (certified)	80	84	88	56	0.62	1.60	0.47	0.25	2.32	2.94*
Freedom!	86	85	88	48	0.66	1.37	0.51	0.25	2.13	2.78*
Common O	75	66	82	38	0.45	1.26	0.43	0.26	1.96	2.40
Cinnamon Plus	86	83	83	41	0.52	1.29	0.38	0.20	1.87	2.39
Rustler	71	73	75	26	0.61	1.08	0.35	0.17	1.60	2.21
Experimental Varieties										
CW 202	92	93	93	51	0.91	1.11	0.44	0.23	1.79	2.70*
RC 0303G	76	74	76	38	0.60	1.25	0.42	0.17	1.84	2.44*
CW 30091	79	81	81	49	0.54	1.27	0.38	0.22	1.88	2.42
B-9.2013	73	73	76	39	0.71	0.86	0.32	0.18	1.35	2.07
Mean	80	79	82	43	0.62	1.23	0.41	0.21	1.86	2.49
CV,%	18	20	17	47	38.25	14.41	22.90	36.70	15.23	13.95
LSD,0.05	21	23	20	30	0.35	0.26	0.14	0.12	0.41	0.51

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

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 Web site, www.uky.edu/Ag/Forage:

- 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)
- 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 9. Dry matter yields and stand persistence of red clover varieties sown April 7, 2011, at Princeton, Kentucky.

Variety	Percent Stand				2011 Total	Yield (tons/acre)				2-year Total	
	2011		2012			2012					
	Jun 14	Sep 22	Mar 14	Oct 29		Apr 18	May 22	Jun 19	Sep 14		Total
Commercial Varieties—Available for Farm Use											
GLB09	97	85	94	1	0.87	2.03	0.71	0.46	0.08	3.29	4.15*
Kenland (certified)	94	85	89	15	0.91	1.90	0.67	0.44	0.16	3.17	4.08*
Cinnamon Plus	97	93	95	20	0.89	1.89	0.56	0.34	0.15	2.94	3.84*
Freedom!	95	93	97	19	0.80	1.55	0.69	0.40	0.22	2.86	3.65*
Experimental Varieties											
B-8.1500	92	84	92	2	0.80	1.65	0.70	0.46	0.06	2.88	3.67*
RC 0303G	94	95	94	19	0.99	1.67	0.51	0.33	0.15	2.65	3.65*
LS 9703	95	93	97	9	0.87	1.54	0.54	0.41	0.22	2.70	3.57*
GA9908	93	82	86	9	0.81	1.55	0.50	0.38	0.16	2.59	3.40
GA110RC	96	87	95	7	0.68	1.62	0.46	0.31	0.14	2.53	3.21
Mean	95	89	93	11	0.85	1.71	0.59	0.39	0.15	2.85	3.69
CV,%	4	11	9	85	17.62	13.04	14.89	14.83	46.72	11.12	12.06
LSD,0.05	6	15	12	14	0.22	0.33	0.13	0.08	0.10	0.49	0.65

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

Table 10. Dry matter yields and stand persistence of white clover varieties sown April 6, 2010, at Lexington, Kentucky.

Variety	Percent Stand						Yield (tons/acre)						3-year Total
	2010		2011		2012		2010 Total	2011 Total	2012			Total	
	Aug 6	Oct 15	Mar 22	Oct 6	Mar 21	Aug 23			Apr 27	May 17	Jun 20		
Commercial Varieties—Available for Farm Use													
Will	100	97	91	85	166	39	0.95	1.82	0.57	0.42	0.26	1.24	4.01*
Regal	99	95	83	88	90	24	0.79	1.99	0.43	0.46	0.29	1.18	3.97*
Patroit	99	96	89	90	95	20	0.80	1.85	0.57	0.47	0.25	1.29	3.94*
Ivory 2	98	98	94	93	95	41	0.58	1.58	0.56	0.48	0.21	1.25	3.41*
Common	99	94	76	88	74	29	0.71	1.51	0.52	0.32	0.25	1.09	3.30*
Durana	96	97	88	88	93	35	0.58	1.40	0.60	0.45	0.26	1.30	3.28
Kopu II	100	97	72	84	86	16	0.75	1.43	0.50	0.33	0.23	1.07	3.25
Companion	98	96	75	88	86	29	0.70	1.32	0.44	0.43	0.20	1.07	3.09
Crusader II	100	96	91	58	55	28	0.84	1.34	0.40	0.29	0.16	0.85	3.02
Ocoee	99	96	76	75	82	23	0.72	1.19	0.47	0.45	0.18	1.10	3.01
Rampart	98	93	71	77	74	22	0.57	1.35	0.44	0.30	0.13	0.87	2.79
Experimental Varieties													
CW 204	98	97	79	80	91	44	0.95	1.87	0.49	0.43	0.31	1.23	4.05*
AMP-124	99	92	73	75	86	19	0.69	1.60	0.58	0.43	0.25	1.25	3.54*
CW 040041	99	99	83	74	81	33	0.82	1.50	0.59	0.36	0.21	1.16	3.48*
RD86	99	99	74	81	82	34	0.69	1.29	0.49	0.43	0.28	1.19	3.18
KY MC	98	97	68	69	74	13	0.58	1.10	0.45	0.36	0.23	1.03	2.71
Mean	98	96	80	81	88	28	0.73	1.51	0.51	0.40	0.73	1.14	3.38
CV,%	2	4	27	16	44	52	31.63	19.01	24.05	21.51	39.03	19.93	16.00
LSD,0.05	3	5	31	18	55	21	0.33	0.41	0.17	0.12	0.13	0.32	0.77

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

Table 11. Dry matter yields and stand persistence of white clover varieties sown April 7, 2011, at Lexington, Kentucky.

Variety	Percent Stand				2011 Total	Yield (tons/acre)				2-year Total
	2011		2012			2012			Total	
	Jul 11	Oct 6	Mar 21	Oct 12		Apr 27	May 17	Jun 20		
Commercial Varieties—Available for Farm Use										
Regal	93	93	92	59	1.15	0.43	0.36	0.11	0.90	2.06*
Will	91	94	99	73	0.90	0.53	0.43	0.14	1.10	2.00*
Jumbo II	94	98	92	63	1.00	0.45	0.42	0.10	0.97	1.97*
Patriot	91	92	95	48	0.73	0.55	0.42	0.10	1.07	1.81*
KY Select	88	94	96	33	0.74	0.57	0.37	0.05	0.98	1.72*
Ivory II	80	92	92	59	0.74	0.44	0.41	0.09	0.94	1.68*
GWC-AS10	87	89	85	45	0.72	0.40	0.38	0.12	0.90	1.63*
Ocoee	91	84	87	30	0.73	0.40	0.29	0.06	0.75	1.48*
Kopu II	85	91	88	41	0.68	0.30	0.32	0.08	0.70	1.38
Durana	76	86	89	48	0.58	0.37	0.32	0.06	0.74	1.32
WBDX	86	86	88	29	0.54	0.35	0.34	0.06	0.75	1.29
Crusader II	92	87	50	21	0.64	0.15	0.17	0.03	0.35	0.99
Experimental Varieties										
CW 040041	93	97	96	68	1.04	0.46	0.42	0.13	1.01	2.06*
CW 204	93	95	91	55	0.96	0.46	0.35	0.09	0.89	1.86*
AMP 124	84	88	90	34	0.87	0.37	0.34	0.11	0.82	1.69*
NFWC04-29	84	88	88	33	0.53	0.41	0.34	0.05	0.80	1.33
RD86	86	92	76	48	0.67	0.26	0.23	0.07	0.56	1.23
NFWC04-49	65	80	79	39	0.33	0.28	0.27	0.07	0.62	0.95
Mean	87	90	87	46	0.75	0.40	0.34	0.08	0.83	1.58
CV,%	11	9	10	37	37.28	32.40	28.53	64.73	28.82	29.40
LSD,0.05	13	11	12	24	0.40	0.18	0.14	0.08	0.34	0.66

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

Table 12. Performance of red clover varieties across years and locations.

Variety	Proprietor/KY Distributor	Lexington					Eden Shale			Princeton		Quicksand		
		2010 ¹			2011		2010			2011		2010		
		10 ²	11	12	11	12	10	11	12	11	12	10	11	12
Commercial Varieties—Available for Farm Use														
Cinnamon Plus	FFR/Southern States	*	*	*	*	x ³	*	*	*	*	*	*	x	*
Common O	Public	*	*	x	x	*	x	*	x				x	x
Emarwan	Rose-AgriSeed												x	x
Freedom!	Barenbrug USA	*	*	x	*	*	*	*	*	*	*	*	x	x
Freedom! MR	Barenbrug USA	*	*	*			*	*	*			*	x	x
Juliet	Caudill Seed Company						x	x	x					
GLB09	Public	*	x	x			x	*	x	*	*	x	x	x
Kenland (certified)	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	*	*	x	*
Kenland (uncertified)	Public	*	x	x			*	*	x			x	x	x
Quinequeli	Caudill Seed Company						*	x	x					
Rustler	Oregro Seeds	*	x	*	*	x	*	*	*	*	*	*	x	x
Starfire II	Cal/West & Ampac Seed	*	*	*			*	*	*			*	x	x
Wildcat	Brett Young Seeds											*	x	x
Experimental Varieties														
AMP-116	Ampac Seed	*	x	*			*	x	x				x	x
B-8.1500	Blue Moon Farms									*	*			
B-9.2013	Blue Moon Farms	*	*	*	*	x	*	*	*			x	x	x
CW 202	Cal/West Seeds	*	*	*	*	x	*	*	*			x	x	x
CW 30091	Cal/West Seeds	*	*	*	x	x	*	*	*			x	x	x
GA110RC	Univ of GA									x	x			
GA9908	Univ of GA									*	x			
KY Tetraploid	KY Agr. Exp. Station	*	*	*			*	*	*			*	*	*
RC 0303G	FFR/Southern States				*	x				*	x			
LS 9703	Lewis Seed									*	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 13. Performance of white clover varieties across years.

Variety	Type	Proprietor/KY Distributor	Lexington				
			2010 ¹			2011	
			10 ²	11	12	11	12
Commercial Varieties—Available for Farm Use							
Companion	Ladino	Oregro Seeds, Inc.	*	x ³	*		
Crusader II	Intermediate	Allied Seed, L.L.C.	*	x	x	x	x
Durana	Intermediate	Pennington	x	x	*	x	x
GWC-AS10	Ladino	Ampac Seed Co				x	*
Ivory 2	Medium leaved	DLF International	x	*	*	x	*
Jumbo II	Ladino	Ampac Seed Co				*	*
Kopu II	Intermediate	Ampac Seed Co	*	x	*	x	x
KY Select	Intermediate	Saddlebutte	x	x	*	x	*
Ocoee	Ladino	Allied Seed, L.L.C.	*	x	*	x	x
Patriot	Intermediate	Pennington	*	*	*	x	*
Rampart	Ladino	Allied Seed, L.L.C.	x	x	x		
Regal	Ladino	Public	*	*	*	*	*
WBDX	Dutch	Saddlebutte				x	x
Will	Ladino	Allied Seed, L.L.C.	*	*	*	*	*
Experimental Varieties							
AMP-124	Intermediate	Ampac Seed Co	*	*	*	*	*
CW 040041	Ladino	Cal/West Seeds	*	x	*	*	*
CW 204	Ladino	Cal/West Seeds	*	*	*	*	*
NFWC04-29	Intermediate	Noble Foundation				x	*
NFWC04-49	Intermediate	Noble Foundation				x	x
RD86	Ladino	Allied Seed, L.L.C.	*	x	*	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 white clover variety in the test.



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