

# 2004 Red and White Clover Report

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## Introduction

Red clover (*Trifolium pratense* L.) is a high-quality, short-lived, perennial legume that is 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 and, therefore, is versatile as a forage crop. Stands are generally productive for two or three 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, high 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: Small, intermediate and large (ladino). The intermediate type is thought to persist better than the large type under pasture or continuous grazing conditions.

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 and 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.

## Important Considerations in Selecting a Clover Variety

**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. Red clover generally produces measurable yields for three 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 often by virtue of its reseeding ability particularly in wet seasons.

**Seed quality.** Buy high-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 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 (four sown in 2002, one in 2003, two in 2004), Princeton (sown in 2003), Quicksand (sown in 2003) and Eden Shale (sown in 2003). The soils at Princeton (Crider), Lexington (Maury), and Quicksand (Pope) were well-drained silt loams. Eden Shale has a Nicholson silt loam soil. All are well suited to clover production. Plots were 5 by 15 feet and were arranged in a randomized complete block design with four replications at every location.

Seedings were made at 12 pounds of seed per acre for red clover entries and 3 pounds per acre for white clover into a prepared seedbed using a disk drill. The first cutting in the seedling 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, 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 Quicksand, Lexington, Eden Shale and Princeton are presented in Table 1.

Yield data (on a dry matter basis) are presented in Tables 2 through 11. Yields are given by cutting date 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. Yields are given by cutting for 2004 and by year for each prior year.

Statistical analyses were performed on all clover data (including experimental varieties) to determine if 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, but 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 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 the certified or proprietary red clovers. In Kentucky, the 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 that 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 that the variety was not

significantly different from the highest-yielding variety. 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 2 through 11. Make sure seed of the variety selected is properly labeled and will be available when needed.

## Summary

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

Other College of Agriculture publications related to the establishment, management, and harvesting of clover are available from the local county Extension office are listed below:

- AGR-1 Lime and Fertilizer Recommendations
- AGR-2 Producing Red Clover Seed in Kentucky
- AGR-18 Grain and Forage Crop Guide for Kentucky
- AGR-24 Kenstar Red Clover
- AGR-26 Renovating Hay and Pasture Fields
- AGR-33 Growing Red Clover in Kentucky
- AGR-64 Establishing Forage Crops
- AGR-90 Inoculation of Forage Legumes
- AGR-93 Growing White Clover in Kentucky
- AGR-148 Weed Control Strategies for Alfalfa and Other Forage Legume Crops
- ENT-17 Insect Management Recommendations for Field Crops and Livestock
- PPA-10 Kentucky Plant Disease Management Guide for Forage Legumes

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**Table 1. Temperature and rainfall at Bowling Green, Eden Shale, Lexington and Princeton, Kentucky in 2004.**

	Eden Shale				Lexington				Princeton				Quicksand			
	Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall		Temperature		Rainfall	
	°F	DEP	IN	DEP	°F	DEP	IN	DEP		DEP	IN	DEP	°F	DEP	IN	DEP
JAN	30	0	4.3	+1.76	30	-1	3.14	+0.28	36	+2	4.12	+0.32	34	+3	4.48	+1.19
FEB	36	+3	1.35	-1.4	36	+1	1.32	-1.89	39	+1	2.44	-1.99	39	+6	3.45	-0.15
MAR	48	+5	2.92	-1.8	47	+3	3.43	-0.97	53	+6	4.28	-0.66	49	+8	3.84	-0.5
APR	56	+2	4.32	+0.17	55	0	3.06	-0.82	59	0	5.32	+0.52	51	+4	4.84	+0.74
MAY	69	+6	7.8	+3.39	68	+4	9.79	+5.32	72	+5	7.34	+2.38	68	+6	11.22	+6.74
JUN	72	+1	1.66	-2.11	72	0	3.13	-0.53	74	-1	3.4	-0.45	71	+1	6.19	+2.37
JUL	73	-2	3.37	-1.16	73	-3	7.65	+2.65	75	-3	4.87	+0.58	75	+1	2.3	-2.95
AUG	71	-3	3.86	+0.13	71	-4	2.91	-1.02	73	-4	3.02	-0.99	72	-1	1.37	-2.64
SEP	69	+1	2.14	-1.05	68	0	2.61	-0.59	71	0	0.2	-3.13	69	+3	6.8	+3.28
OCT	58	+1	6.51	+3.52	58	+1	5.65	+3.08	64	+5	4.03	+0.98	61	+7	4.19	+1.29
NOV	49	+4	5.02	+1.47	49	+4	6.29	+2.90	53	+6	6.94	+2.31	51	+9	3.56	-0.032
Total			43.25	+2.92			48.98	+8.41			45.96	-0.13			53.09	+9.04

DEP is departure from the long-term average for that location.

**Table 2. Dry matter yields(tons/acre) and percent stand of breeder and common red clover varieties<sup>1</sup> sown April 13, 2002 at Lexington, Kentucky.**

Variety	Yield(tons/acre)						% Stand		
	2003 Total	2003 Total	2004 Yield			3-yr Total	Oct. 21, 2003	Jun 24, 2004	Aug. 10, 2004
			May 21	Jun 24	Total				
Common F	1.78	5.90	2.73	0.91	3.65	11.33*	83	50	12
Kenland (breeder) <sup>2</sup>	1.28	6.12	2.77	0.95	3.71	11.12*	78	40	13
Common H	1.27	5.61	2.78	0.61	3.40	10.28*	65	24	10
Common D	1.57	5.46	2.51	0.68	3.19	10.22*	75	33	9
Common I	1.33	5.22	2.40	0.49	2.90	9.45	46	16	4
Common L	1.33	5.04	2.33	0.34	2.67	9.05	50	20	6
Common G	1.39	4.81	2.12	0.50	2.62	8.82	35	19	5
Common J	1.20	4.67	0.92	0.12	1.04	6.91	24	4	0
Common M	1.11	4.51	0.63	0.12	0.75	6.37	10	4	1
Common P	1.23	4.16	0.83	0.08	0.92	6.30	10	6	0
Common B	1.30	4.15	0.62	0.08	0.70	6.14	10	5	1
Common N	1.18	4.13	0.56	0.20	0.76	6.07	16	6	1
Common E	1.26	4.01	0.68	0.12	0.80	6.07	15	7	0
Common Q	1.16	4.22	0.37	0.12	0.49	5.86	13	6	0
Common R	1.03	4.25	0.13	0.13	0.25	5.54	8	4	0
Common C	1.14	3.86	0.25	0.07	0.32	5.32	8	4	0
Common A	1.25	3.77	0.21	0.02	0.23	5.25	6	2	0
Common O	0.87	4.05	0.23	0.09	0.31	5.24	15	5	0
Common K	0.86	3.69	0.10	0.06	0.15	4.70	9	2	0
Mean	1.24	4.61	1.24	0.30	1.54	7.38	30	13	3
CV, %	23.24	8.60	36.75	46.76	35.35	11.40	33	53	83
LSD, 0.05	0.41	0.56	0.64	0.20	0.77	1.19	14	10	4

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

<sup>1</sup> Common seed was obtained from a range of seed suppliers.<sup>2</sup> Kenland breeder seed was entered as a comparison between an improved variety and common seed. Breeder seed is the designation for an original seed source for an improved variety.

**Table 3. Dry matter yields(tons/acre) and percent stand of red and white clover varieties sown April 12, 2002 at Lexington, Kentucky.**

Variety	Yield(tons/acre)						% Stand		
	2002 Total	2003 Total	2004 Yields				3-yr Total	Oct. 21, 2003	Aug. 3, 2004
			May 21	Jun 28	Aug 3	Total			
<b>Commercial Varieties—Available for Farm Use</b>									
Certified Kenland	1.09	6.47	1.88	1.08	0.22	3.18	10.74*	80	23
Freedom!	0.99	6.13	1.72	0.87	0.12	2.71	9.83*	79	15
Cinnamon Plus	0.88	6.05	1.84	0.87	0.10	2.81	9.74*	78	11
Duration	0.80	5.85	1.69	0.89	0.25	2.83	9.48	78	34
Cardinal	0.86	5.35	1.82	0.82	0.14	2.78	9.00	54	14
Solid	0.93	5.32	1.41	0.50	0.04	1.95	8.20	40	4
Regal (white clover)	0.71	3.25	0.35	0.41	0.33	1.10	5.05	91	63
Common	0.84	3.70	0.22	0.08	0.01	0.31	4.85	0	2
<b>Experimental Varieties</b>									
RC 9101	0.86	5.90	1.97	0.81	0.06	2.85	9.61	59	8
RC 9601	0.85	5.50	1.54	0.77	0.12	2.43	8.77	63	16
CW 3001	0.74	5.17	1.54	0.65	0.10	2.29	8.21	35	14
EC 408	0.64	4.14	0.65	0.25	0.13	1.03	5.81	3	1
NIB 1195	0.59	3.99	0.66	0.17	0.13	0.95	5.54	1	0
ULC 1715/86	0.65	4.15	0.43	0.12	0.06	0.61	5.40	0	1
NIB13693	0.74	3.99	0.40	0.11	0.04	0.54	5.28	1	0
Mean	0.81	5.00	1.21	0.56	0.12	1.89	7.70	44	14
CV, %	16.36	7.67	30.96	26.25	67.14	24.29	8.22	20	64
LSD, 0.05	0.19	0.55	0.53	0.21	0.12	0.66	0.90	13	12

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

**Table 4. Dry matter yields(tons/acre) of red and white clover varieties sown April 4, 2003 at Lexington, Kentucky.**

Variety	2003 Total	2004 Yields					2-yr Total
		May 21	Jun 28	Aug 3	Sep 16	Total	
<b>Commercial Varieties—Available for Farm Use</b>							
Certified Kenland	1.20	2.95	1.63	0.53	0.39	5.50	6.69*
Freedom!	0.98	2.54	1.52	0.45	0.48	4.99	5.97*
Cinnamon Plus	0.87	2.99	1.15	0.37	0.46	4.98	5.85*
Solid	1.04	2.52	1.25	0.26	0.39	4.42	5.46
Advantage (white)	1.18	2.37	0.72	0.44	0.27	3.80	4.98
GDQ	0.94	2.68	0.78	0.01	0.02	3.48	4.42
GDSG	0.88	2.51	0.76	0.01	0.03	3.31	4.19
Common	0.95	2.94	0.22	0.01	0.05	3.22	4.17
GDLH	0.95	2.26	0.81	0.04	0.03	3.13	4.08
Patriot (white)	0.96	1.88	0.57	0.33	0.29	3.07	4.03
Regal (white)	1.03	1.56	0.66	0.40	0.30	2.92	3.95
Durana (white)	1.03	1.54	0.51	0.22	0.31	2.58	3.61
Colt (white)	0.83	1.51	0.51	0.23	0.35	2.59	3.42
Barblanca (white)	1.01	1.22	0.49	0.33	0.34	2.39	3.40
<b>Experimental Varieties</b>							
Freedom! MR	1.15	2.95	1.59	0.60	0.55	5.69	6.84*
KY Tetraploid	1.17	2.84	1.38	0.42	0.55	5.19	6.36*
Low Phenolic	1.08	2.95	1.37	0.41	0.33	5.06	6.14*
Kenton (KNARS)	0.86	2.83	1.40	0.36	0.28	4.87	5.73
CW7000 (white)	1.40	1.69	0.78	0.52	0.33	3.31	4.71
Mean	1.03	2.35	0.95	0.31	0.30	3.92	4.95
CV, %	18.65	28.70	12.72	26.82	40.16	18.26	14.97
LSD, 0/05	0.27	0.96	0.17	0.12	0.17	1.02	1.05

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

**Table 5. Dry matter yields(tons/acre) of red and white clover varieties sown April 2, 2003 at Princeton, Kentucky.**

Variety	2003 Total	2004 Yields					2-yr Total
		May 10	Jun 14	Jul 21	Sep 9	Total	
<b>Commercial Varieties—Available for Farm Use</b>							
Freedom!	3.81	4.13	1.72	0.83	0.59	7.27	11.08
Certified Kenland	3.75	4.29	1.25	0.69	0.45	6.67	10.42
Solid	3.95	3.57	1.37	0.55	0.28	5.78	9.73
GDQ	3.87	3.77	1.14	0.09	0.01	5.01	8.89
GDSG	3.44	3.96	1.12	0.09	0.01	5.17	8.61
GDLH	3.56	3.80	1.17	0.06	0.01	5.04	8.60
Common	3.28	4.47	0.17	0.02	0.00	4.66	7.94
Regal (white)	3.03	2.47	0.66	0.55	0.32	4.00	7.03
CA Ladino (white)	2.96	2.52	0.66	0.44	0.27	3.90	6.86
Patriot (white)	2.51	2.61	0.70	0.60	0.33	4.25	6.76
Durana (white)	2.22	2.55	0.54	0.43	0.25	3.76	5.98
<b>Experimental Varieties</b>							
KY Tetraploid	3.92	5.34	1.71	1.07	0.74	8.86	12.78*
Freedom! MR	4.01	4.14	1.67	0.74	0.60	7.15	11.16
Low Phenolic	3.73	4.25	1.43	0.81	0.55	7.04	10.77
Kenton (KNARS)	3.65	3.99	1.55	0.50	0.24	6.27	9.93
Mean	3.45	3.72	1.12	0.50	0.31	5.66	9.10
CV, %	10.55	19.51	23.62	41.16	63.71	14.70	10.58
LSD, 0.05	0.52	1.04	0.38	0.29	0.28	1.19	1.37

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

**Table 6. Dry matter yields(tons/acre) of red and white clover varieties sown March 28, 2003 at Quicksand, Kentucky.**

Variety	2003 Total	2004 Yields			2-yr Total
		Jun 14	Jul 19	Total	
<b>Commercial Varieties—Available for Farm Use</b>					
Freedom!	2.64	2.20	1.38	3.58	6.22*
Regal (white)	2.54	2.33	1.05	3.38	5.92*
Durana (white)	2.43	2.40	0.96	3.36	5.79*
CA ladino (white)	2.53	1.87	1.17	3.04	5.57
Patriot (white)	2.70	1.83	1.03	2.87	5.57
Certified Kenland	2.37	1.72	1.22	2.94	5.31
GDSG	2.23	1.78	0.96	2.74	4.97
GDQ	2.02	2.11	0.80	2.90	4.93
GDLH	1.98	1.95	0.86	2.81	4.79
Common	2.02	1.54	0.46	2.00	4.02
<b>Experimental Varieties</b>					
KY Tetraploid	2.63	2.30	1.53	3.83	6.46*
Low Phenolic	2.78	2.04	1.32	3.36	6.14*
Kenton (KNARS)	2.47	2.21	1.30	3.51	5.97*
Freedom! MR	2.15	2.19	1.38	3.56	5.71
Mean	2.39	2.03	1.01	3.13	5.53
CV, %	9.95	17.72	10.06	11.62	8.70
LSD, 0.05	0.34	0.52	0.16	0.52	0.69

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

Variety	2002 Total	2003 Total	2004 Yields				3-yr Total
			May 18	Jun 23	Aug 3	Total	
<b>Commercial Varieties—Available for Farm Use</b>							
Certified Kenland	0.72	4.85	1.52	0.78	0.16	2.46	8.03*
Freedom!	0.69	4.63	0.97	0.66	0.12	1.75	7.08*
Plus	0.77	4.47	0.62	0.53	0.12	1.26	6.50
Cinnamon	0.74	4.26	0.62	0.53	0.06	1.21	6.21
RedlanGraze II	0.77	4.12	0.55	0.54	0.03	1.11	6.01
Duration	0.61	4.29	0.44	0.40	0.06	0.90	5.79
Starfire	0.75	4.15	0.30	0.41	0.10	0.81	5.72
Solid	0.76	4.23	0.32	0.35	0.02	0.69	5.68
Acclaim	0.89	4.04	0.14	0.21	0.04	0.39	5.32
Royal Red	0.87	3.34	0.40	0.50	0.11	1.01	5.23
Belle	0.64	3.81	0.10	0.14	0.04	0.28	4.73
Red Start	0.82	3.35	0.08	0.22	0.02	0.32	4.49
Prima	0.61	3.53	0.07	0.07	0.01	0.15	4.29
Arlington	0.72	3.26	0.07	0.07	0.03	0.17	4.15
Cherokee	0.66	3.02	0.04	0.01	0.00	0.05	3.73
<b>Experimental Varieties</b>							
Kenway (KVMRS)	0.60	4.40	1.78	0.78	0.18	2.75	7.75*
Freedom! MR	0.75	4.68	0.75	0.55	0.11	1.41	6.83
Kenton (KNARS)	0.75	4.41	0.63	0.44	0.08	1.15	6.30
KY Tetraploid	0.68	4.45	0.54	0.45	0.10	1.09	6.21
Low Phenolic	0.74	4.19	0.50	0.35	0.08	0.93	5.86
Mean	0.73	4.08	0.52	0.40	0.07	0.99	5.79
CV, %	27.91	15.12	44.87	32.31	68.08	34.44	13.90
LSD, 0.05	0.29	1.03	0.33	0.18	0.07	0.48	1.14

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

Variety	2002 Total	2003 Total	2004 Yields				3-yr Total	
			May 21	Jun 28	Aug 10	Sep 28		
<b>Commercial Varieties—Available for Farm Use</b>								
Freedom!	2.31	6.67	1.83	1.09	0.51	0.15	3.59	12.57*
Certified Kenland	2.34	6.74	1.89	0.88	0.32	0.19	3.28	12.37*
Will Ladino (white)	1.98	4.64	1.29	0.47	0.54	0.49	2.78	9.40
Crescendo (white)	1.74	5.04	1.29	0.33	0.43	0.39	2.44	9.21
Tillman II (white)	2.23	4.50	1.01	0.40	0.43	0.45	2.29	9.02
CA Ladino (white)	1.85	4.70	1.47	0.22	0.37	0.21	2.27	8.82
Common (white)	2.21	4.79	1.53	0.05	0.09	0.13	1.81	8.81
Regal (white)	2.06	5.15	1.09	0.09	0.14	0.16	1.48	8.69
Kopu II (white)	1.67	4.77	1.18	0.26	0.32	0.35	2.12	8.56
Ivory (white)	1.74	5.02	1.22	0.14	0.16	0.21	1.73	8.49
Jumbo Ladino (white)	1.60	4.90	1.27	0.12	0.09	0.22	1.70	8.19
<b>Experimental Varieties</b>								
CW9808 (white)	1.95	4.88	1.47	0.33	0.36	0.29	2.45	9.27
CW9801 (white)	1.87	4.67	1.03	0.62	0.39	0.36	2.39	8.93
CW9701 (white)	1.66	4.61	1.34	0.29	0.51	0.37	2.51	8.78
CW9502 (white)	1.97	4.67	0.97	0.19	0.35	0.33	1.85	8.48
Mean	1.95	5.05	1.33	0.37	0.33	0.29	2.31	9.31
CV,%	23.38	8.07	22.16	42.39	42.87	51.33	20.91	9.77
LSD, 0.05	0.65	0.58	0.42	0.22	0.20	0.21	0.69	1.30

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

**Table 9. Dry matter yields(tons/acre) of red and white clover varieties sown August 25, 2003 at the Eden Shale farm near Owenton, Kentucky.**

Variety	2004 Yields				
	Jun 1	Jul 1	Aug 9	Sep 24	Total
<b>Commercial Varieties—Available for Farm Use</b>					
Freedom!	1.03	0.47	0.32	1.07	2.89*
GDLH	1.03	0.54	0.31	0.75	2.64
Solid	1.09	0.39	0.26	0.85	2.59
Certified Kenland	1.07	0.42	0.24	0.85	2.58
GDQ	1.11	0.44	0.26	0.69	2.51
GDSG	1.03	0.48	0.21	0.68	2.40
Common	1.14	0.35	0.22	0.49	2.19
Regal (white)	0.65	0.35	0.26	0.46	1.72
Durana (white)	0.65	0.37	0.30	0.31	1.63
Patriot (white)	0.54	0.43	0.21	0.42	1.60
<b>Experimental Varieties</b>					
Freedom! MR	1.15	0.55	0.39	1.02	3.10*
Kenton (KNARS)	1.15	0.48	0.35	0.87	2.85*
Low Phenolic	1.09	0.42	0.36	0.86	2.73*
KY Tetraploid	0.98	0.52	0.26	0.86	2.61
Mean	0.98	0.44	0.28	0.73	2.43
CV, %	21.39	24.50	32.49	12.11	13.05
LSD, 0.05	0.3	0.16	0.13	0.13	0.45

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

**Table 10. Dry matter yields(tons/acre) of red clover varieties sown April 7, 2004 at Lexington, Kentucky.**

Variety	2004 Yields			
	Jun 24	Aug 10	Sep 28	Total
<b>Commercial Varieties—Available for Farm Use</b>				
FSG9601	1.01	1.47	0.69	3.17*
Red Gold Plus	0.91	1.36	0.71	2.98*
Certified Kenland	0.57	1.40	0.98	2.95*
Freedom!	0.67	1.17	0.88	2.72*
Emarwan	0.88	1.07	0.62	2.58*
<b>Experimental Varieties</b>				
KY Tetraploid	0.79	1.23	1.06	3.08*
CW10002	0.98	1.24	0.75	2.96*
ZR0105R	0.90	1.38	0.59	2.86*
Freedom! MR	0.87	1.19	0.77	2.83*
Kenton (KNARS)	0.77	1.27	0.68	2.72*
WVPB-RC-NT	0.86	1.17	0.68	2.72*
ZR0003R	0.87	1.03	0.65	2.54*
ZR0004R	0.87	1.08	0.56	2.50*
Low Phenolic	0.68	0.99	0.67	2.35
Kenway (KVMRS)	0.42	0.99	0.89	2.31
GAc1RC	0.91	0.91	0.36	2.18
Mean	0.81	1.18	0.72	2.71
CV, %	23.64	24.20	23.86	18.78
LSD 0.05	0.28	0.41	0.25	0.73

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

**Table 11. Dry matter yields(tons/acre) of white clover varieties sown April 7, 2004 at Lexington, Kentucky.**

Variety	2004 Yields			
	Jun 24	Aug 10	Sep 28	Total
<b>Commercial Varieties—Available for Farm Use</b>				
Super Haifa	0.52	0.52	0.56	1.59*
CA Ladino	0.39	0.64	0.55	1.57*
Regal	0.39	0.53	0.55	1.47*
Seminole	0.48	0.46	0.50	1.44*
<b>Experimental Varieties</b>				
GA-178	0.36	0.59	0.59	1.55*
RD07	0.48	0.48	0.59	1.55*
KY Synthetic	0.47	0.57	0.46	1.50*
RD19	0.37	0.50	0.57	1.44*
Crusader	0.47	0.37	0.52	1.37*
RD06	0.30	0.46	0.47	1.23*
Mean	0.42	0.51	0.54	1.47
CV, %	24.85	26.19	20.09	15.42
LSD, 0.05	0.15	0.19	0.16	0.41

\*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									Quicksand		Princeton		Eden Shale
		2002 <sup>1</sup> (Table 3)			2002 (Table 7)			2003		2004	2003		2003	2003	
		02 <sup>2</sup>	03	04	02	03	04	03	04	04	03	04	03	04	04
<b>Commercial Varieties-Available for Farm Use</b>															
Acclaim	Allied Seed, L.L.C.				*	*	X								
Arlington	WI Agric. Exp. Station				*	X	X								
Belle					*	X	X								
Cardinal	Seed Research of Oregon	X	X	X											
Cherokee	FL Agric. Exp. Station				*	X	X								
Cinnamon Plus	FFR/Southern States	X	*	*	*	*	X	X	*						
Common	Public	X	X	X				X	X		X	X	X	X	X
Duration	Cisco Companies	X	X	X	*	*	X								
Emarwan	Van Dyke Seed Co.									*					
FSG9601	Allied Seed, L.L.C.									*					
Freedom!	Barenbrug	*	*	*	*	*	X	X	*	*	*	*	*	X	*
GDLH	Public							X	X		X	X	*	X	X
GDSG	Public							X	X		X	X	X	X	X
GDQ	Public							X	X		X	X	*	X	X
Plus	Allied Seed, L.L.C.				*	*	X								
Kenland, certified	KY Agric. Exp. Station	*	*	*	*	*	*	*	*	*	X	X	*	X	X
Prima	Public				*	X	X								
Red Gold Plus	Turner Seed Co.										*				
RedlanGraze II	Americas Alfalfa				*	*	X				X				
Red Start	Syngenta				*	X	X								
Royal Red	FFR/Southern States				*	X	X								
Solid	Improved Forages Inc.	*	X	X	*	*	X	X	X				*	X	X
Starfire	Ampac Seed Co.				*	*	X								
<b>Experimental Varieties</b>															
CW 3001	Cal/West Seeds	X	X	X											
CW10002	Cal/West Seeds									*					
EC 408	Emerald Commodities, Inc	X	X	X											
Freedom! MR	KY Agr. Exp. Station				*	*	X	*	*	*	X	X	*	X	*
GAc1RC	Univ. of Georgia									X					
Kenton (KNARS)	KY Agr. Exp. Station				*	*	X	X	*		*	*	*	X	X
Kenway (KVMRS)	KY Agr. Exp. Station				*	*	*				*				
KY Low phenolic	KY Agr. Exp. Station				*	*	X	X	*	X	*	*	*	X	*
KY Tetraploid	KY Agr. Exp. Station				*	*	X	*	*	*	*	*	*	*	X
MR54	Forage Genetics International										*				
NIB 1195	Barenbrug USA	X	X	X											
NIB 13693	Barenbrug USA	X	X	X											
RC 9101	Allied Seed, L.L.C.	X	X	X							*				
RC 9301	FFR Cooperative										*				
RC 9501	FFR Cooperative										*				
RC 9601	Allied Seed, L.L.C.	X	X	X							*				
RC 9803g	FFR Cooperative										*				
ULC 1715/86	Barenbrug USA	X	X	X											
WVPB-RC-NT	Smith Seed Services									*					
ZR0003R	ABI Alfalfa									*					
ZR0004R	ABI Alfalfa									*					
ZR0105R	ABI Alfalfa									*					

<sup>1</sup> Establishment year

<sup>2</sup> Harvest year

Open boxes indicate the variety was not in the test.

x in the box indicates the variety was in the test but yielded significantly less than the top variety 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 and locations.**

Variety	Proprietor/KY Distributor	Lexington						Quicksand		Princeton		Eden Shale
		2002 <sup>1</sup>			2003		2004	2003		2003		2003
		02 <sup>2</sup>	03	04	03	04	04	03	04	03	04	04
<b>Commercial Varieties-Available for Farm Use</b>												
Advantage (white)	Allied Seed, L.L.C.				*	*						
Barblanca (white)	Barenbrug				X	X						
California Ladino (white)	Public	*	*	*				*	*	*	*	
Colt (white)	Seed Research of Oregon				X	X						
Common (white)	Public	*	*	X								
Cresendo (white)	Cal/West Seeds	*	*	*								
Durana (white)	Pennington				X	X		*	*	X	*	*
Ivory (white)	Cebeco International Seeds	*	*	X								
Jumbo (white)	Ampac Seed Co.	*	*	X								
Kopu II (white)	Ampac Seed Co.	*	*	*								
Patriot (white)	Pennington				X	*		*	*	*	*	*
Regal Ladino (white)	Public	*	*	X	X	*	*	*	*	*	*	*
Seminole (white)	Saddle Butte Ag. Inc.						*					
Super Haifa (white)	Allied Seed, L.L.C.						*					
Tillman II (white)	Caudill Seed Co.	*	X	*								
Will Ladino (white)	Allied Seed, L.L.C.	*	*	*								
<b>Experimental Varieties</b>												
Crusader (white)	Barenbrug						*					
CW 7000 (white)	Cal/West Seeds				*	*						
CW 9502 (white)	Cal/West Seeds	*	*	X								
CW 9701 (white)	Cal/West Seeds	*	*	*								
CW 9801 (white)	Cal/West Seeds	*	*	*								
CW 9808 (white)	Cal/West Seeds	*	*	*								
GA-178 (white)	Univ. of Georgia						*					
KY Synthetic (white)	KY Agr. Exp. Station						*					
RD06 (white)	Allied Seed, L.L.C.						*					
RD07 (white)	Allied Seed, L.L.C.						*					
RD19 (white)	Allied Seed, L.L.C.						*					

1 Establishment year

2 Harvest year

Open boxes indicate the variety was not in the test.

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

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



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