



2019 Red and White Clover Report

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, 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 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.

| | 2017 | | | | 2018 | | | | 2019 ² | | | |
|-------|------|------------------|----------|--------|------|-----|----------|--------|-------------------|-----|----------|-------|
| | Temp | | Rainfall | | Temp | | Rainfall | | Temp | | Rainfall | |
| | °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.

² 2019 data is for ten months through October.

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

| | 2019 ² | | | |
|-------|-------------------|------------------|----------|-------|
| | Temp | | Rainfall | |
| | °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 |

¹ DEP is departure from the long-term average.

² 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 | | | |
|-------|-------------------|------------------|----------|-------|
| | Temp | | Rainfall | |
| | °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.

² 2019 data is for ten months through October.

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.

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.

| Variety | Seedling Vigor ¹ 2017 Oct 12 | Percent Stand | | | | | Yield (tons/acre) | | | | | 2-year Total |
|--|--|---------------|--------|--------|--------|--------|-------------------|-------|-------|-------|-------|--------------|
| | | 2017 | | 2018 | | 2019 | 2018 | 2019 | | | Total | |
| | | Oct 12 | Mar 14 | Sep 25 | Mar 22 | Oct 11 | Total | May 8 | Jun 6 | Jul 9 | | |
| Commercial Varieties-Available for Farm Use | | | | | | | | | | | | |
| 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.

| Variety | Seedling Vigor ¹ 2018 May 22 | Percent Stand | | | | Yield (tons/acre) | | | | | | |
|--|---|---------------|--------|--------|--------|-------------------|-------|-------|-------|--------|-------|-------|
| | | 2018 | | 2019 | | 2018 | 2019 | | | | Total | |
| | | May 22 | Sep 25 | Mar 22 | Oct 11 | Total | May 8 | Jun 6 | Jul 9 | Aug 14 | | |
| 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.

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

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

| Variety | Seedling Vigor ¹ 2019 May 3 | Percent Stand | | Yield (tons/acre) | | |
|--|--|---------------|--------|-------------------|-------|-------|
| | | May 3 | Oct 11 | 2019 | | Total |
| | | Jul 11 | Aug 15 | | | |
| Commercial Varieties-Available for Farm Use | | | | | | |
| 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 Varieties | | | | | | |
| 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

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 yield 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.

| Variety | Percent Stand | | Yield (tons/acre) | | |
|--|---------------|-------|-------------------|--------|-------|
| | 2019 | | 2019 | | |
| | May 7 | Nov 4 | Jul 2 | Aug 14 | Total |
| Commercial Varieties-Available for Farm Use | | | | | |
| 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.

| Variety | Seedling Vigor ¹ 2019 May 30 | Percent Stand | | Yield (tons/acre) | | |
|--|--|---------------|--------|-------------------|--------|-------|
| | | 2019 | | 2019 | | |
| | | May 30 | Oct 23 | Jun 10 | Aug 15 | Total |
| Commercial Varieties-Available for Farm Use | | | | | | |
| 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.

| Variety | Percent Stand | | | | | Yield (tons/acre) | | | | | | |
|--|---------------|--------|--------|-------|--------|-------------------|-------|--------|--------|--------|--------------|-------|
| | 2017 | | 2018 | | 2019 | 2017 | 2018 | 2019 | | | 3-year Total | |
| | Sep 29 | Mar 20 | Sep 25 | Apr 1 | Oct 23 | Total | Total | May 13 | Jun 11 | Jul 10 | | Total |
| Commercial Varieties-Available for 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.

| Variety | Seedling Vigor ¹ 2018 May 22 | Percent Stand | | | | Yield (tons/acre) | | | | | |
|--|---|---------------|--------|-------|--------|-------------------|--------|--------|--------|--------------|-------|
| | | 2018 | | 2019 | | 2018 | 2019 | | | 2-year Total | |
| | | May 22 | Sep 25 | Apr 1 | Oct 23 | Total | May 13 | Jun 11 | Jul 10 | | Total |
| Commercial Varieties-Available for 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 Varieties | | | | | | | | | | | |
| 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.

| Variety | Seedling Vigor ¹ 2019 May 3 | Percent Stand | | Yield (tons/acre) |
|--|--|---------------|--------|----------------------|
| | | 2019 | | 2019 |
| | | May 3 | Oct 23 | Jul 10 |
| Commercial Varieties-Available for Farm 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 growth.

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

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

| Variety | Type | Proprietor/ KY Distributor |
|--|--------------|----------------------------|
| Commercial Varieties-Available for Farm Use | | |
| 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 Varieties¹ | | |
| 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.

| Variety | Proprietor/ KY Distributor |
|--|----------------------------|
| Commercial Varieties-Available for Farm Use | |
| 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 Varieties¹ | |
| 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 |
| GATPCP | Univ. of GA |
| UK2014(2,4-D) | KY Agric. Exp. Station |
| MVS-ROZ | Mountain View Seeds |
| PAG-37 | Preferred Alfalfa Genetics |
| RC 0702 | DLF Pickseed |
| RC 0705G | Hood River Seed |

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

