



Growing Red Clover in Kentucky

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Red clover is widely grown for hay and pasture in Kentucky. It is almost always grown with a companion, cool season grass such as tall fescue, orchardgrass, or timothy. The clover establishes easily, adapts to most soils, fits well into rotations with other crops, and is an excellent pasture crop when grown with an adapted grass. Certain easy-to-follow practices are necessary, however, to get the maximum benefit from this crop.

Type of Soil and Fertilization

Red clover grows best on medium to well-drained soils with a pH range of about 6.1 to 6.7. To correct acidity, limestone should be applied as long before seeding as possible. Red clover grows in soils that are medium in phosphorus and potassium, but yields are higher and stands last longer if adequate amounts of these elements are added (see Extension publication AGR-1 for detailed lime and fertilizer recommendations).

Sowing the Crop

Generally, red clover is sown in Kentucky from mid-February to mid-April. Seedings made by the middle of March are usually most successful when seeded in small grains or other "new seedings." Earlier renovation seedings are more successful than later ones.

Good stands of clover may be difficult to obtain in dense small grain stands. Therefore, seeding rates should not be more than $\frac{3}{4}$ bushel per acre of wheat, barley, or rye, or $1\frac{1}{2}$ bushels per acre of oats. However, in Kentucky most seedings of red clover are made into grass pastures or hay fields. The clover seed may be sown with a grain drill with a small seeder attached, a band seeder, a corrugated roller seeder, a pasture renovator, or a cyclone-type seeder. Cyclone-type seedings should be made after a light disking or on a freeze.

The crop may also be sown in late summer, but this is more hazardous than spring seeding because of drought and crown-rot injury. For late summer seedings (usually best about August 1-15), a well-prepared seedbed is necessary. One of the best sowing methods is to use a cultipacker seeder, or to otherwise distribute the seed evenly between cultipackings.

Red clover seedlings are very competitive with grass seedlings when planted together. One method to establish a mixed stand is to seed the cool season grass in the late summer/early fall and add red clover the following late winter or early spring. Seeding clover with grass in the spring will especially favor the legume over the grass.

Use fresh, pre-inoculated seed or treat uninoculated seed with the appropriate commercial inoculum and plant at rates of eight to 12 pounds per acre if sown without grasses. Rates of seeding may be reduced by about 25 percent when sown with grasses. Mixed stands of grass and red clover are desirable to prevent erosion and to provide forage if the stand is grazed or harvested after the clover has disappeared. Clover may be re-established in grass-dominant fields through renovation (see Extension publication AGR-26, "Renovating Grass Fields").

Varieties

Several excellent varieties of red clover are available in Kentucky. For detailed yield results, see University of Kentucky Agricultural Experiment Station Progress Reports on Kentucky Variety Trials (issued annually by crop for red clover, alfalfa, tall fescue, and orchardgrass).

Yields of certified, improved varieties of red clover can be substantial. At Lexington, second year stands produced almost six tons of hay in 1992 and almost 12 tons over the life of the stand. Yields of these varieties generally were not significantly different. Low performing seed sold in Kentucky include Norlac and Common. Canadian-produced Norlac seed is not adapted to Kentucky and may yield less than 50 percent of that of Kenstar. Tests indicate that the common uncertified lots may vary in yield from 10 to 90 percent of the yield of Kenstar.

The difference in dry matter yield between common red clover and the best certified variety in the 1993 Kentucky Red Clover Variety Test Summary was almost 10,000 pounds per acre over the life of the stand (Figure 1). Stand differences were evident by 15 months after planting. Certified seed of several varieties should be sown for reliable production.

Management

Red clover is a short-lived perennial crop. Production during the second year is generally higher than during either the first or third years. The weather influences red clover growth much more than the growth of deeper-rooted alfalfa, so a cutting schedule is more difficult to set with red clover. However, farmers generally do not utilize red clover as intensively as they should for maximum yields of high-quality feed.

Because the plants need about 45 days to store carbohydrates before a hard freeze occurs, the last cutting of red clover

Red Clover Variety Effect

Best Certified Versus Common

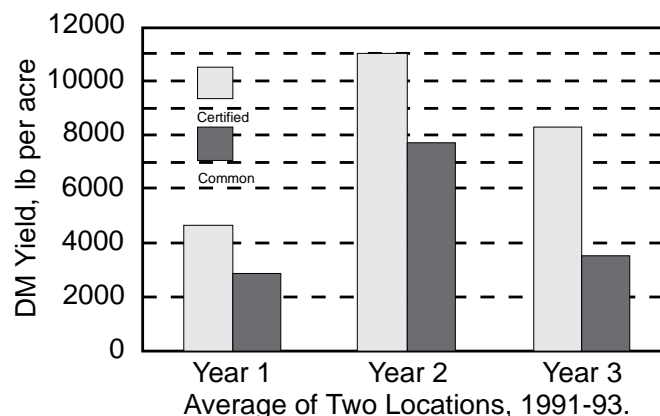


Figure 1. Yields of the top-ranking certified red clover and the worst common medium red clover in the University of Kentucky Forage Variety Trials seeded in April 1991 (average of Lexington and Princeton locations).

should be made no later than September 15 in central Kentucky, probably about September 10 in northern and eastern Kentucky, and no later than September 25 in the western and southern parts of the state. Growth should be removed after “freeze-down.” Leaving very heavy growth on a field during fall and winter can kill an entire stand.

If summer weather is hot and dry, clover growth may almost stop, and sometimes very short plants will start to bloom. Cutting clover during hot, dry weather weakens plants and results in a thinner stand the following year. It may be impractical to cut these short plants for hay, but if feed is needed badly, the clover may be grazed lightly. If summer rainfall is good, clover may be cut about every 35 to 42 days or each time plants reach about 10 percent bloom. Red clover stands that are one year old or older should be cut three or four times between early May and September if soil moisture is adequate for growth. It is important to give the plants about 45 days between the last cutting and “freeze-down,” which occurs about November. An additional harvest (or grazing) can be made after “freeze-down.”

Red clover fields seeded in late winter or early spring by the renovation method should be grazed to control grass growth until animals begin to bite off red clover seedlings. The first cutting should be taken when clover plants are at about 10 percent bloom. This should occur about June 1-15 depending on the weather, seeding date, and farm location. Try to get two more cuttings, with the last one coming off around the last cutting dates mentioned above.

If red clover is seeded in small grain, it is best to remove the small grain straw before it starts to smother out the clover. Clover can be cut each time it reaches about 10 percent bloom. Time the cuttings, insofar as possible, to provide 35 to 42 days between cuts and to get the last cut off by September 10-25, depending on the location in the state.

Animal Problems with Second or Later Hay Cuttings

Hay made from the second or later cuttings may be unpalatable or cause slobbering by livestock. The definite cause is not known, but the slobbering appears to be associated with a plant disease called Black Patch caused by a fungus, *Rhizoctonia leguminicola*. Since the fungus is present in most red clover fields and no resistance is available, it is difficult to prevent infection. Historically this was more of a problem when red clover was cut only twice per year. Slobbers is usually not a problem with properly managed stands.

Management techniques which can help minimize Black Patch include (1) making the second cutting at the proper time (10 percent bloom), which will decrease the time period for establishment of Black Patch; (2) mixing second or later cuttings with first cutting hay during feeding; (3) growing grass in a mixture with the red clover; and/or (4) feeding the later cut hay last during the winter.

Red Clover for Pasture Renovation

Red clover is an excellent legume to establish in grass pastures where legumes have disappeared. It is usually best to disturb the existing sod by disking or some other means of mulch tillage in the late fall or winter and to sow the clover between mid-February and April 1. Grass should be kept clipped

or grazed until the clover is well established. Rotational rather than continuous grazing is likely to result in longer life of the stand (see AGR-26).

Red Clover in Successive Rotations

It has been observed that red clover stands are difficult to obtain, yields are low, and persistence is short after two or three successive clover rotations. This is thought to be due to buildup of soil insects, fungi, and nematodes specifically adapted to red clover. If difficulty is encountered, use some other rotation. White clover, including ladino, may be more resistant to these pests than red clover.

Natural Reseeding of Red Clover

Frequently, during the second or third season, clover allowed to go to seed will produce enough seed to re-establish itself. It is necessary to remove grazing animals from the field about July 15 to allow adequate time for seed formation. Usually, bumble bees will be present in sufficient numbers for pollination. Animals may be reintroduced after seeds are ripe (when brown seeds are easily rubbed out of clover heads). It is best to mow these fields after the seed is mature. To scatter the seed evenly, use a rotary mower. A sufficient number of hard seeds should be available to re-establish the crop in the next spring. Management after natural reseeding should be similar to that following renovation.

While natural reseeding is certainly cheap, it may not always be economical. Balance the per acre cost of eight pounds of red clover seed (roughly \$16) against the value of one or more cuttings of hay (often one to three tons). This production can easily be worth \$60 per ton or up to \$180 per acre.

Summary

Some practices to follow in maintaining red clover stands are:

1. After stands are established, cut or graze when the field reaches first flower to 10 percent bloom.
2. To extend red clover stand life in pastures, graze rotationally rather than continuously.
3. Graze or harvest for hay only up to September 10 to 25. Allow about 45 days between the last cutting or grazing and the first hard freeze. After a freeze, growth can be removed.
4. Keep fertility level medium to high. Maintain pH level at 6.1 to 6.7.
5. When clover stands are lost, reseed by the renovation method.

Related Publications

- 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-64 Establishing Forage Crops
- AGR-90 Inoculation of Forage Legumes
- AGR-148 Weed Control Strategies for Alfalfa and Other Forage Legume Crops
- ENT-17 Insecticide Recommendations for Alfalfa and Clover
- PPA-10d Kentucky Plant Disease Management Guide for Forage Legumes
- PR-389 The 1996 Red Clover Report