

Red clover is a legume often overseeded into small grains in late winter in the higher rainfall areas of eastern Kansas. It is a high quality forage that can be either grazed or put up for hay. Red clover is most productive the second year of its life. It produces seed and dies the second year.

Red clover is native to the countries that border the Mediterranean and Red Seas. It has slightly higher net energy value and total digestible nutrients than alfalfa hay. It has two-thirds the digestible protein of alfalfa hay ("Growing Red Clover," 1973). Red clover hay has a crude fiber of 30% (Duke and James, 1990). Red clover holds its quality as it matures longer than alfalfa. It can be delayed from 1/10-1/2 bloom without much deterioration in quality (Ingram, 1991). Flowers are self-sterile and must be cross pollinated for seed production ("Growing Red Clover," 1973).

Soil Requirements

The roots of red clover penetrate 3-6 feet deep. It must be well supplied with phosphorus and potassium ("Red Clover in Kansas," 1976). It has a more fibrous root system than alfalfa. Red clover tolerates acid soils and low soil fertility better than alfalfa (Ingram, 1991). It is most productive in the pH range of 6.6 to 7.6 ("Growing Red Clover," 1973). Red clover is tolerant both to high and low pH levels and is better adapted than alfalfa at lower pH levels of 5.6-6.5 (Duke and James, 1990). Red clover's general sensitivity to stress and low level management limits its role as a winter annual (Smith and Varco, 1987).

Rainfall

Red clover is tolerant to waterlogging. It can tolerate 12-75 inches per year (Duke and James, 1990). However, it is "quite sensitive to inadequate moisture" ("Red Clover in Kansas," 1976). Red clover does not have the drought tolerance in Kansas of alfalfa, sweetclover, and lespedeza (Kansas Rural Center On-farm Demonstration).

Nitrogen Credits

Two cuttings red clover harvested for hay with only stubble and roots for plowdown will provide 40-60 pounds per acre of nitrogen credits. Two-thirds of the nitrogen is in the above ground growth, with one-third of the nitrogen below ground ("Red Clover in Kansas," 1976). A red clover/grass mixture should double the yield of unfertilized grass (Tesar and Holland, 1983). Three-year total nitrogen credits were estimated to be 151 pounds per acre with the proportion contributed each year to be 70% the first year, 20% the second year, and 10% the third year (Fox and Piekielek, 1988).

Kansas State University research near Parsons found no first-year sorghum response difference between red clover and hairy vetch. On the higher fertility site the red clover effects lasted into the third crop year (Ediger, 1998). There was no significant grain sorghum yield response to nitrogen fertilizer for two years following red clover. Haying or mulching the red clover didn't appear to have a significant grain sorghum yield response (Moyer and Sweeney, 1997).

Varieties

Medium is the most common type which is an early flowering variety. Mammoth, a late-flowering variety, is grown where the season is short and a single cutting of hay is made ("Growing Red Clover," 1973). Kenland and Ken Star are superior in Missouri (Ingram, 1991).

Winter Hardiness

Red clover has good winter hardiness ("Cover Crops Management for No-till Grain Crop Production," 1986). A plant that blooms in the seedling year has much less winter hardiness ("Red Clover in Kansas," 1976). Nurse crops with red clover reduce winter damage the first year. After cutting in the fall, allow red clover to regrow four to six weeks before the first frost ("Growing Red Clover," 1973).

Establishment

Seedling vigor and competition are medium to high ("Cover Crops Management for No-till Grain Crop Production," 1986). Broadcast into small grains in February or March at a seeding rate of 10-12 pounds per acre. Red clover can be broadcast over a uniform snow cover. Freezing and thawing will work the seed into the ground for germination. Red clover can be drilled at a depth of ¼-½ inches in late summer with a firm seedbed. If drilled, the rate can be reduced to 8-10 pounds per acre ("Red Clover in Kansas," 1976).

When a red clover/grass mixture is desired, timothy is the best choice. Sow timothy in the early fall and sow red clover in the following spring ("Growing Red Clover," 1973). Suggested seeding rates per acre of red clover when interseeded with the following grasses: orchardgrass - 6 pounds per acre; timothy - 2 pounds per acre; tall fescue - 10 pounds per acre; reed canary grass - 6 pounds per acre (Ingram, 1991). Inoculate and broadcast seed into pasture in mid-March to mid-April. Graze close to the ground in mid-May to reduce grass competition and again in mid-June. Repeat this rotation about three more times in the summer or cut for hay and graze. Reseed red clover every two years (Tesar and Holland, 1983).

Insects

Many insects feed on red clover but few cause economic damage (Ingram, 1991).

Harvesting

Remove the nurse crop's straw and stubble from the field after grain harvest in the first year. This should double later yields and reduce disease development ("Growing Red Clover," 1973). Red clover produced 2.83 tons per acre in a KSU research trial at Parsons (Moyer and Sweeney, 1997).

Livestock can bloat on red clover. Red clover can be maintained in tall fescue pasture for only 2-3 years ("Red Clover in Kansas," 1976). It is one of few legumes in which early grazing doesn't harm the stand. The total lifetime yield is larger for fall seedings than spring or winter plantings (Ingram, 1991).

Ervin Ediger uses red clover for grazing and hay in an oats to wheat rotation on his farm near Hillsboro. Oats are spaced in 16 inch rows with red clover planted in perpendicular rows. The oats are baled during low rainfall to save moisture for the red clover. Otherwise, during higher spring rainfall the oats are harvested for grain. Red clover is later either grazed or

baled the seedling year dependent on growth and rainfall. Two hay cuttings are harvested the second year with one to two tons of hay per acre with each cutting. Clover hay has a protein content ranging from 17 -19% and a RVF score of slightly more than 150, making it comparable to alfalfa. While it is not as pretty hay as alfalfa, Ediger's cows prefer it to alfalfa. Ediger destroys red clover after the second cutting to prepare a seedbed for wheat. After two or three years of wheat, the field is then planted to vetch and rotated to grain sorghum. Ediger likes the way red clover quickens the rotation compared to alfalfa. Another important benefit for Ediger is clover's resistance to alfalfa weevil (Ediger, 1998).

Publications

Kansas State University Extension has produced a useful publication entitled "Red Clover in Kansas," C-546, 1976.

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CREDITS

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