

Red Clover

Red clover (*Trifolium pratense*) is Michigan's most common cover crop. Its easy establishment and shade tolerance make it useful in several cropping sequences. Although classified as a perennial legume, it acts like a biennial and typically succumbs to disease pressure in its second growing year.

Michigan's three common red clover cultivars are Michigan mammoth, Canadian mammoth (also known as Altaswede clover) and June (also known as medium red clover). Choose a cultivar based on how the seeding will be used. Michigan mammoth has been shown to perform better than the other red clovers when frost-seeded into well-fertilized wheat (Table 1), but is not as productive a forage crop as June clover. Subsequent research has shown that frost-seeded June clover performs as well as Michigan mammoth in well-fertilized wheat. Canadian-grown mammoth clover does not tolerate the increased shading and competition from well-fertilized wheat, but works well when seeded with oats. Ohio-grown mammoth clover should perform nearly as well as Michigan grown mammoth in well-fertilized wheat. Michigan mammoth is scarce and is often sold out by March, so order early to ensure delivery.

Benefits

A red clover cover crop has several benefits, including:

- Contributing up to 120 pounds of soil nitrogen for the following crop rotation
- Reducing soil erosion and surface water pollution
- Increasing soil organic matter, improving soil tilth and increasing water holding capacities
- Reducing grass and broadleaf weed pressure
- Serving as a forage and/or pasture species

Use

Red clover is most commonly used in rotations between non-leguminous crops, such as corn or small grains (wheat, oats, barley, rye and spelt) followed by a spring-seeded non-leguminous crop (corn, buckwheat, oats, etc.).

Establishment

Establishing a dense stand is critical to realizing a red clover cover crop's full value. Select fields that have relatively good weed control, as clover seedlings do not compete well with established weeds. There are several methods for establishing a red clover stand:

- Frost-seeding into an established winter annual (wheat, barley, rye or spelt) is the most common method. Broadcast 10-12 lb/A of seed (Michigan mammoth or June) before the ground thaws. Clover seedlings are resistant to frost, so the seed can be broadcast as early as soil conditions permit. Seed can be applied to snow cover if the snow is not deep and the

soil is firm and level. Apply nitrogen fertilizer uniformly and at application rates based on proven small grain yields. Overapplications are costly and inhibit clover establishment. Red clover seed may be applied with urea if the mixing and application operations are uniform. MCPA is labeled for broadleaf weed control in winter annuals with clover seedings, however, take care to prevent seedling injury (refer to [MSU Extension Bulletin E-434](#), Weed Control Guide for Field Crops).

- Drilling after harvesting silage or high-moisture corn, or with a winter or spring annual using a “grass box” attached to the drill. Use 10-12 lb/A of red clover seed (Michigan mammoth or June). Do not attempt to establish a stand in corn treated with a pre-emergent broadleaf herbicide (i.e. atrazine). Instead, use a post-emergent broadleaf program.
- Overseeding into standing corn immediately after sidedressing nitrogen or the last cultivation (whichever is later), or before a spring annual’s emergence (oats, spring wheat) also provides a good stand. Broadcast 10-12 lb/A of seed (any cultivar). Again, use a post-emergence broadleaf program instead of establishing a clover stand in corn treated with a pre-emergence broadleaf herbicide (i.e. atrazine).

Management

Controlling Red Clover once red clover has served its purpose it should be killed, otherwise it becomes a weed. The main control methods are:

- Spring or fall moldboard plowing or shallow (two-inch) chisel plowing using overlapping sweeps. Spring plowing is preferred because it decreases the potential for nitrogen leaching. Spring plowing should coincide with optimum soil moisture conditions, as a growing red clover stand can quickly remove too much soil moisture, creating droughty growing conditions for the following crop.
- Applying herbicides when using a red clover cover crop in conservation tillage and no-till situations. [MSU](#) recommends fall herbicide treatments under these conditions. Before applying the herbicide, mow the clover crop (mid-August in northern Michigan or early September in central and southern Michigan). Allow the plants to regrow for four weeks and treat with two quarts of Roundup per acre when air temperatures exceed 60 F (but when soil temperatures are below 50 F to reduce nitrogen leaching) and the plants are actively growing. Farmer experience indicates that clover can be successfully controlled with glyphosate + 2,4-D (see table for rates) in the spring, followed with corn seven to 10 days later. Soybeans and dry beans should never follow a clover crop unless the clover will be moldboard plowed. Due to limited herbicide options, clover may escape and compete with the bean crop.

Nitrogen Management

The amount of nitrogen contributed by the red clover will depend on the density of the stand and the time of year that the clover was killed. In general, spring-killed clover contributes more nitrogen than fall-killed clover. Preplant nitrogen rates should be based on current [MSU](#) recommendations (60 lbs/acre N credit for a 100 percent stand of red clover). Sidedress nitrogen rates should be based on

a pre-sidedress nitrate test. This test, however, may not identify all of the nitrogen provided by the red clover, as it probably will not have completely mineralized when the sample is taken.