

## Crimson Clover

Crimson clover (*Trifolium incarnatum*) is a relatively new cover crop for Michigan. Traditionally used further south, MSU researchers and southern Michigan farmers have used this annual clover effectively as a cover crop in corn, soybeans and wheat. Crimson clover has taller flower stems, grows more quickly and has larger seeds than the more commonly used red clover.

Crimson clover's primary advantages are rapid growth during cool weather, shade tolerance and a positive reseeding potential. Thus, crimson clover can be planted early in spring or fall for weed control, or overseeded in corn at second cultivation or in soybeans at leaf drop. Because of its shade tolerance and reseeding potential, crimson is also effective as a living cover in orchards.

### Benefits

Crimson clover's many benefits include:

- Nitrogen credit for succeeding crops (average of at least 30 to 60 lbs/A for fall-planted, spring-killed stands in Michigan)
- Increased soil organic matter and decreased soil erosion and surface water pollution
- Decreased weed pressure, especially in spring and fall
- Use as a forage or pasture species

### Establishment

Crimson clover can tolerate almost any soil type, but prefers loam soils with good drainage. Avoid using it on poorly drained soils, however, due to potential disease problems. Inoculate the seed with *Rhizobium* inoculant for true clovers when planting in a field in which a nodulated true clover has not been grown in the last three years. Seed germination and seedling survival require cool, but not cold, night temperatures (less than 60°F) and sufficient soil moisture. As with many cover crops, crimson clover seed germinates better and requires lower seeding rates when drilled than when broadcast. Crimson seed should be planted at a depth of 0.25- to 0.5-inch. If broadcasting crimson seed, disk it lightly to incorporate. Plant at a rate of 12-20 lbs/A, using the lower rate in cool soils and the higher rate in warmer soils. Planting crimson with a grass can help prevent some winter kill. In this case, 15 lb/A of crimson seed is sufficient, along with 1.5 to 2 bu/A of a cereal (oats, barley, wheat), or 18-25 lb/A of annual ryegrass seed.

### Crimson clover in crop rotation

- **Crimson Clover in Corn:** Crimson clover's higher than average shade tolerance means that seedlings survive in corn when planted at the V4 to V8 corn leaf stage. Until the canopy opens as the corn matures, there is little clover growth and, therefore, no significant competition with the growing corn plant. Clover growth following corn harvest can be rapid, and in a warm, moist year beautiful, bright red flowers may develop prior to first freeze.

- **Crimson Clover in Soybeans:** In soybeans, overseeding by highboy at leaf drop is recommended.
- **Crimson Clover in Wheat:** Unlike red clover, crimson does not do well frost-seeded into wheat or other already-established small grains. Instead, crimson clover does best when planted after wheat is harvested.
- **Crimson Clover in Short-Season Crops:** Crimson clover has been used effectively to suppress weeds when planted in the early fall, following a short-season crop such as potatoes, snap beans, vegetables, or following winter wheat. Planting with a grass such as oats, which is also fast-growing, gives additional weed control in these situations.

## Management

As with all cover crops, killing time for crimson clover is determined by the planting date for the succeeding crop and/or soil moisture. In a dry spring, kill the cover early to avoid water stress on the succeeding crop. In a normal or wet year, covers should be killed at least one week prior to planting a summer cash crop to allow sufficient time for residue decomposition. Crimson clover can be killed by moldboard plowing or with herbicides (see [Controlling Cover Crops](http://covercrops.msu.edu/general/control.html) (<http://covercrops.msu.edu/general/control.html>) in Michigan information sheet).

The primary disadvantages to crimson clover are the seed cost and potential for winter kill, although both of these challenges may change in the near future as new varieties are developed. In addition, winter kill may be beneficial because it leaves a field ready for spring work. If sufficient growth occurs in the fall, frost-killed crimson provides many cover crop benefits, including protection against soil erosion and contributions to soil organic matter. It must be noted, though, that a crimson clover stand that is winter killed will probably release much of its nitrogen prior to maximum uptake by the succeeding corn crop.

Crimson clover also comes in hard-seeded and soft-seeded varieties. Hard-seeded varieties (including Chief and Dixie) will wait until fall to germinate if seed is set in late spring. Those varieties with a large proportion of hard seed are ideal for self-reseeding, which is often desired in orchards.

Sources: Kellogg Biological Station Cover Crops Research Program; Northeast Cover Crop Handbook, Marianne Sarrantonio, 1994, Rodale Institute; Managing Cover Crops Profitably, Sustainable Agriculture Research and Education Program, [USDA](http://www.usda.gov).