CRIMSON CLOVER COVER CROP TECH NOTE

MARION COUNTY SOIL AND WATER CONSERVATION DISTRICT

COVER CROP PROFILE	
Common Name	Crimson Clover
Scientific Name	*Trifolium incarnatum*
Cover Crop Type	Legume / Nitrogen Fixing
Life Cycle	Winter annual
Winter Survival	Expected
Growth Habit	Upright to semi-upright
Growth Height	12" - 18"
SEEDING INFORMATION	
Northern IN Planting Dates	May 15 - September 30
Southern IN Planting Dates	May 1 - September 30
Seeding Rate	1 oz / 100 square feet
Seeding Rate (in a mix)	0.3 to 1 oz / 100 square feet
Seeding Depth	1/4" - 1/2"
Germination Period	~ 3 to 7 days
Inoculation	Recommended

BENEFITS OF CRIMSON CLOVER

Ranked out of 4 stars

Nitrogen Source	★★★★
Soil Builder	★★★★
Erosion Preventer	★★★
Topsoil Loosener	★★★
Weed Fighter	★★

Crimson clover is a versatile legume cover crop. Its benefits include nitrogen contribution, quick growth, weed suppression, biomass, and habitat for beneficial and pollinating insects. Like many legumes, it forms a symbiotic relationship with nitrogen-fixing bactera in its root nodules, whereby these microorganisms convert atmospheric nitrogen into a form that the plant utilizes for its development. When a legume cover crop is terminated, the nitrogen in the decomposing plants is released into the soil and can be utilized by the following crop. Growers can strategically plant legumes in crop rotations to provide nitrogen to high nitrogen demanding crops like broccoli and sweet corn. Crimson clover is also a great all-around cover crop to add to mixes for increasing tilth, soil building, and biodiversity. **This document demonstrates strategies and management considerations for using crimson clover to prepare a garden bed for a no-till or low disturbance vegetable planting.**

Managing Crimson Clover for No-Till Vegetables

Overview

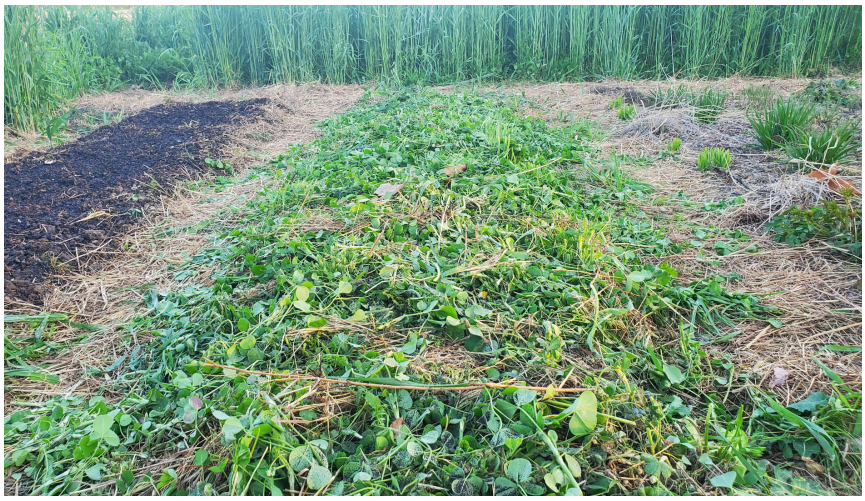
When fall planted in Indiana, crimson clover is expected to survive the winter and flower in early to mid spring, though an occassional winterkill does occur. Before planting the spring crop, growers can terminate the cover crop to prepare the bed for vegetables. One no-till option is to cut down the cover crop onto the surface of the bed, mulch up to ensure termination, and transplant vegetables. Another is to cut down the cover crop, temporarily tarp for 3 to 4 weeks to ensure termination, remove the tarp, and transplant or seed vegetables. Utilizing the cover crop as mulch maximizes soil cover, minimizes disturbance, suppresses weeds, and retains moisture.

Flowering stage in a mix with hairy vetch

Cutting Crimson Clover

Cutting down the crimson clover when it is flowering (after early bud stage) is a good first step to kill the cover crop. Flail mowers, string trimmers, sickles, and sheers are examples of good tools for this task. Regrowth can occur, especially if cut before flowering stage, so additional measures such as mulching up or temporary tarping can be utilized to ensure termination.

Spring growth



Cut crimson clover mulch residue

Transplanted crops work well with crimson clover residue and added mulch. If direct seeding vegetables, an effective method is to cut the crimson clover, tarp until fully terminated, remove the tarp, and seed. This ensures termination and allows time for the the ecology to stabilize before planting seeds. Legume cover crop mulches often have low carbon to nitrogen ratios and decompose quickly. The low-residue mulch after tarping is conducive to direct seeding or transplanting vegetables.

Oats and Crimson Clover > Cut down > Mulch up with straw > Transplant Broccoli

Mulching Up

Mulching up on top of a cut or crimped cover crop ensures termination and increases soil cover. Though multiple variations exist, one technique is to add a layer of newspaper and a layer of straw or hay thick enough to block sunlight from the dying cover crop. Ensure mulches are weed and seed free before applying. Waiting a period of time before opening up transplanting holes decreases the probability of cover crop regrowth in the planting zone. Once the cover crop is fully terminated, open up spaces in the mulch and transplant vegetables.

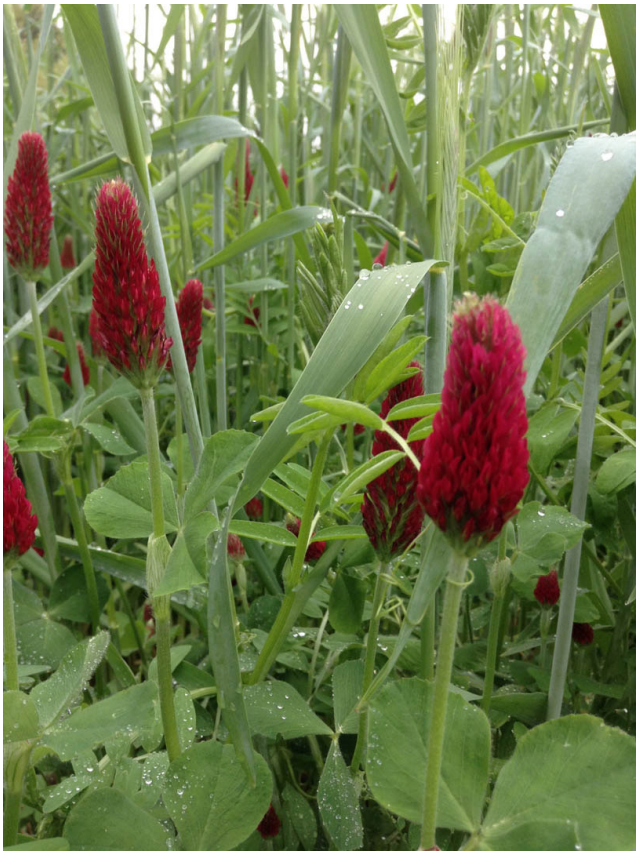
This tactic can be used on a legume cover crop cut prior to flower to prevent regrowth, thereby allowing a grower to no-till plant early spring vegetables.

Oats, crimson clover, and hairy vetch > Early spring cut > Mulch up with paper and straw > Wait 10 days > Transplant kale

Terminating a High Biomass Mix

Crimson clover is an excellent leguminous addition to a high biomass producing cover crop mix with species like cereal rye. However, cutting down a thick grass and legume cover crop mix with hand tools can be labor intensive. Crimping the cover crop by pressing it over and laying it flat on the ground, followed by 3 to 4 weeks of tarping, is an efficient way to kill this mix. If not utilizing a tarp, attempt to time the cimping or cutting when all species in the mix are at their proper termination stages to maximize termination and prevent regrowth.

Crimped cover crop mix



High biomass mix of cereal rye, hairy vetch, and crimson clover

Cereal rye, hairy vetch, and crimson clover > Crimp > Tarp for 3 to 4 weeks > Remove tarp > Transplant

ADDITIONAL CONSIDERATIONS

Planting and Interseeding

Crimson clover is well-suited for **autumn** in Indiana but can also be planted in the **spring and summer** to grow cover and mulch in gaps between vegetable crops. Note that stands generally fare poorly in hot, dry weather and benefit from timely rains or irrigation. If planted early in the season, crimson clover may prodcue seed which could reseed and germinate. Termination can be accomplished prior to reseeding by the methods covered in this document.

Interseeding crimson clover under existing crops can be effective. A mix of oats and crimson clover interseeded under mature tomatoes in September produced sparse oats and a good stand of crimson clover (above). Crimson clover, like most cover crops, has better germination success when incorporated into the soil at its recommended depth, whether by raking it in or planting in furrows. To minimize soil disturbance, add compost, broadcast the cover crop, and lightly incorporate.

Cover crop mixes can be selected based on termination timing and method. Crimson clover is the only cover crop that will survive the winter in this oats, radish, and crimson clover mix (left). Legumes alone are easy to cut and mulch up for a quick transition to early vegetable transplants. With a high biomass cover crop like cereal rye, the mix is best crimped and tarped for 3 to 4 weeks to ensure termination.

ADDITIONAL CONSIDERATIONS

Inoculation

To ensure the presence of nitrogen-fixing bacteria, inoculate crimson clover seeds with rhizobium inoculant for true clovers at planting or utilize pre-inoculated seed. If inoculated crimson clover has been planted in the bed in recent years, the microbiology may already be available in the soil. Nodules can be found on the roots of legumes. Cutting a nodule open and seeing pink coloration is an indicaton that the relationship is producing nitrogen. In general, more nitrogen is produced as the legume approaches flowering.

Cover crops are a key tool in a soil health system:

- Minimize Disturbance
- Maximize Soil Cover
- Maximize Biodiversity
- Maximize Continuous Living Roots

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August 2021

This work is supported by the U.S. Department of Agriculture - Natural Resources Conservation Service and Clean Water Indiana. The USDA is an equal opportunity provider, employer, and lender.

Information is based on NRCS conservation practices, grower experience, SARE Managing Cover Crops Profitably 3rd Edition - Crimson Clover, and the Midwest Cover Crop Council Field Guide