

COVER CROP TABLE

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Fall Cover Crops

CROP	CHARACTERISTICS	WHEN TO PLANT
Barley	A non-legume	Late Season to mid- Fall (August – November)
Crimson Clover*	A winter annual legume that prefers sandy, well-drained soils. N content about 2 - 4% or 80 lbs of N per acre.	Plant it by September 15 to get established before winter arrives.
Clover – Red*	A short-lived perennial. Provides about 60 – 110 lbs of N per Acre.	Late August to late September
Clover – Subterranean*	Cool season annual that tolerates low soil fertility and pH. N content about 2.3% or 30 to 90 lbs of N per acre. Will die on its own in June if not turned under.	Plant late August no later than September 15
Forage Radish (Daikon)	Frost will kill the tops and the long roots will break down over winter. Sometimes half the root is above ground. Reduces soil compaction by bio-drilling (large root growth).	Plant late August, no later than Labor Day
Oats	A non-legume	Late August to mid-November
Peas- Field*	A winter annual legume. N content 3 - 4 % or about 50 – 150 lbs of N per Acre does not re-establish itself.	Plant anytime in September
Rapeseed	Used to help control soil nematodes, bio-fumigation (nematode species differ in their response to toxicity).	Plant by mid-September and turn under in April before it flowers
Rye	A winter annual grass that tolerates a wide range especially heavy, waterlogged soil conditions. N content about 1.3%.	Late August to mid-November
Triticale	A cereal grain cross between wheat and rye.	Late August to mid-November
Vetch – Hairy*	A legume with thick, vine-like growth habit. Be sure to have good seed/soil contact to improve germination rate. Does very good in well-drained soils.	Plant anytime in September
Winter wheat	A non-legume that should be turned under in the spring before it forms a seed head.	Late August to mid-November

*Need a specific inoculate for roots to fix nitrogen.



Fall Cover Crops is a publication of Delaware Cooperative Extension, a partnership between Delaware State University and the University of Delaware. For more information, contact Maggie Moor-Orth at (302) 857-6437/mmoor@desu.edu, or Gordon Johnson at (302) 730-4000/gcjohn@udel.edu.

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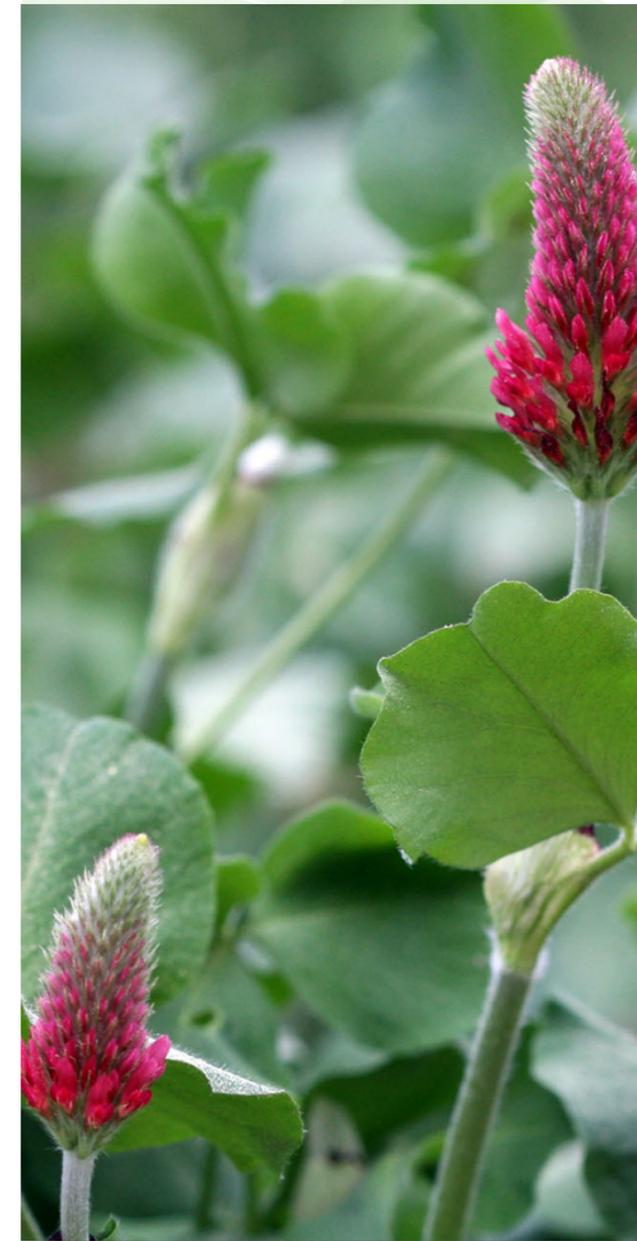
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FALL COVER CROPS

Introduction

During spring and throughout the summer, gardeners are busy harvesting from crops that were planted in their gardens. Our garden soils provide an abundance of harvested peas, lettuce, peppers, tomatoes, sweet corn, yellow squash, zucchini, basil, zinnias and many other vegetables and flowers. Planting a cover crop is one of the best ways to thank our garden soil at the end of the gardening season and to help improve and rebuild it for the next growing season. Cover crops are used as mulches, green manures, nitrogen sources, catch crops and soil covers. A cover crop gives many benefits to the soil. These are:

- Protects soil surface from water runoff
- It protects the soil from being eroded by harsh winter winds and rains.
- It helps reduce or suppress weed growth.
- Helps manage certain insect pests and plant pathogens
- Some cover crop species suppress nematodes
- When turned under in the spring, the decomposition of the plants adds organic matter to your soil
- The organic matter improves soil structure
- It provides ideal conditions/habitats/food for earthworms and other beneficial soil organisms
- Roots from cover crops increase soil aeration and water infiltration
- Reduces soil crusting and soil compaction
- Cover crops return minerals and nutrients to the soil (nutrient cycling).
- Legume cover crops add nitrogen to the soil
- Reduces nitrogen leaching



Crimson clover is a winter annual legume that prefers sandy, well-drained soils. Plant it by September 15 to get established before winter arrives.

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Winter wheat is a non-legume that should be turned under in the spring before it forms a seed head.



When should you plant a cover crop?

One way to determine this is when your annual garden plants (vegetables, flowers and herbs) are finished producing good quality and quantity of fruit. It may also be when you are tired of gardening and/or your schedule permits. Remove all plastic mulches, plant cages and stakes. Remove plants and add them to your compost pile (no weed plants that have gone to seed; chop plant debris into small pieces before adding to your compost pile). Rotary till the garden and prepare the soil surface for seeding.

Which crop should I choose for a cover crop?

Barley, oats, triticale, wheat or rye are small cereal grains that are used for cover crops. They are known as non legumes. Winter varieties are planted in the autumn (between late August and November) and make a great cover crop during the winter. They grow well on soil with fairly good drainage and a pH between 6 and 7. The seeds for any of these crops are available at most gardening supply stores. When planted in the early fall, they have an excellent chance to germinate

and grow several inches. During the winter they will grow very little. With the arrival of warmer days in late February and early March, they will again begin to grow several more inches—just in time to be turned under as a green manure crop and to add rich organic matter to your garden soil.

Crimson clover is an example of a winter annual legume also used as a cover crop. It is planted in the fall and grows quickly in the spring with warmer weather. It also decomposes when turned under adding organic matter to the soil for warm season crops (tomatoes, peppers, sweet corn, melons, squash and lima beans) to use. It should be sowed mid-August to late September. Other winter annual legumes that make good cover crops include hairy vetch and Austrian Winter field peas.

Legumes, like cereal grains when turned under in the spring, add organic matter to your soil, but they also increase the amount of nitrogen in your soil. A Delaware study by Mitchell and Teel, 1977, found hairy vetch and oats together as a cover crop added 154 lbs/acre of nitrogen. These results suggest that cover crops may replace or help reduce the need to apply additional commercial nitrogen fertilizer to your garden soils during the growing season.

How do I plant the cover crop?

Once plant debris is added to your compost and the garden soil is tilled, then take a soil sample. As with other crops, your garden should have a smooth seed bed for planting. After selecting the cover crop that is best for you, either broadcast your cover crop seeds by hand for a small site, or use an adjustable lawn seeder by selecting the correct opening size for the seed. After seeding, gently rake the seed and soil surface, making sure that you have good soil and seed contact. If the weather conditions are dry and hot, irrigate the seed bed. If dry weather continues, keep the seeds moist while they are germinating and continue to water them as they grow into young plants.



Oats are a small cereal grain that are used for cover crops. They are known as non-legumes.

When should I turn the cover crop under in the spring?

Research shows that your cover crop should be turned under around the beginning of April. Legume cover crops, such as crimson clover and hairy vetch, can be allowed to grow to the early flowering stage to maximize the nitrogen benefit. Larger plants can be difficult to turn under, however, if you are going to put in some early cool season crops (potatoes, onions, peas, lettuces, etc.) you may want to turn under just enough to plant these crops. If turned under in April, the cover crop's underground residue will have time to break down. Cover crops turned under in the spring are called green manure. Green manure provides nutrients to the new crops planted and growing. Cover crops (green manure) break down and release nutrients as the new crop needs them.

How do I turn under my cover crop?

For small spaces, you can use a shovel to turn under the cover crop. This method will test the strength of your back. Just dig up a slice and put the green side down. Be sure to chop the slice. The better method calls for a rear-mounted rotary tiller. Depending on your garden size, the ideal method is to use a

tractor and plow for turning under and doing the primary tillage. It is best not to mow your cover crop first,

because the green plant material is the nutrient source for the future crop. Your garden soil should be ready for planting about two weeks after turning your cover crop under, however, you may prefer to wait four weeks to reduce seed corn maggot problems in direct-seeded crops as they are attracted to decaying organic matter.

Planting a cover crop is a wise and good gardening practice; it is an important part of maintaining productive soils and helps our crops to have higher yields during the growing season.