

Protect and Improve Your Soil with Cover Crops

Farmers around the world grow cover crops to increase crop yields. Cover crops, also known as green manures, are an excellent tool for vegetable gardeners, especially where manures and compost are unavailable. They lessen soil erosion during the winter, add organic material when turned under in the spring, improve soil quality, and add valuable nutrients.

Popular fall-planted cover crops include oats, winter rye, winter wheat, crimson clover and hairy vetch (see the chart at the end of this fact sheet). The latter two crops are legumes- plants that can add a lot of nitrogen to your soil after they decompose. These crops are typically planted as early as August 15, but no later than October 10. They should make some growth before the first hard frost. Some cover crops (oats and daikon radish) are killed by cold winter temperature, but most go dormant and resume growth in the spring. Cover crop roots grow deeply into the soil pulling up nutrients that might otherwise leach out of the soil. The crops are turned into the soil before going to seed, usually sometime in late April or early May. Other cover crops, like buckwheat and Dutch white clover, are sown in the spring or summer to cover and improve bare soil.



Winter wheat seeds planted in the walkway. Asian greens planted on the raised beds.



Early November and the cover crop and edible crop are growing at the same time. The winter wheat can tolerate some foot traffic.



Mature Asian mustard greens ready to harvest. The winter wheat cover crop will prevent erosion and improve the soil when it is turned under in the spring.

These are some suggested steps for experimenting with cover crops this fall:

- Decide which cover crops to plant. Combine legumes and non-legumes when possible. Sow oats if this is your first time trying a cover crop or if you want to be able to plant early spring vegetables. Oats are killed by the first hard freeze, leaving a brown decomposing mat in spring.
- Purchase seed locally if possible from a farm supply store or garden center. You can also order cover crop seeds from most retail seed companies. (See the end of HG# 70 “Recommended Vegetable Cultivars for Maryland”.)
- To sow a cover crop over an entire bed: Prepare the soil by tilling under or removing plant wastes and mulch from the summer. Then rake the area smooth.

- To sow a cover crop while vegetable crops are still producing: Remove mulch from around plants and rake the area smooth. Your cover crop will get a good start but will not interfere with vegetable plant growth.
- Now let's plant: The seed must directly contact soil to germinate. Use the amount of seed shown in the chart. Broadcast the seed by hand or with a hand-held broadcast seeder, preferably before a rain, and gently rake seeds evenly into the soil. Then walk on the seeds to press them into the soil. Mixing seeds with soil or compost will make it easier to distribute the cover crop seeds evenly by hand.
- Winter wheat and winter rye will produce massive root systems- great for breaking up tight, clay soil. They are also difficult to turn under in the spring unless you have access to a tiller.
- Remember that spring planting may be delayed somewhat by a cover crop (except for oats and daikon radish), since you must allow about 2 weeks for the plants to break down.



Oat and rye seed mixed with compost to ensure even distribution of seeds sown by hand.

Be a good steward of the earth by planting a cover crop this fall.

Photo Gallery



A mixture of winter wheat (tall plants) with hairy vetch (vining plants).



Oats planted in the fall beginning to die from cold winter temperatures.



Fast growing daikon or forage radish sown in the fall produces a large root that can help break up compacted soil.



Crimson clover holding soil in place on the sloped end of a raised bed.



Crimson clover in bloom.



Buckwheat blooms attract bees.



Large tillers are useful for turning under winter cover crop in the spring.

Cover Crops for Vegetable Gardens

Type (L=legume)	Amount (oz) to Sow per 100 sq. ft	When to Sow**	When to Turn Under	Notes
Alfalfa (L)	½	Spring or late summer	Fall Spring	Needs warm temps for germination. Hardy and drought tolerant.
Barley	4	Spring or late summer/fall	Spring	Not as hardy as rye. Tolerates drought.
Buckwheat	2 ½	Spring or summer	Anytime	Grows quickly. Will reseed itself Not hardy.
Crimson clover *** (L)	3	Spring or late summer/fall	Fall Spring	Beautiful spring blooms.
Forage radish*	4	Late summer/fall	Spring	Large white roots break up clay soil. All parts are edible. Monitor for harlequin bugs.
Spring Oats*	4	Spring or late summer/fall	Summer Spring	Not cold hardy; tolerates low pH.
Winter rye	4	Late summer/fall	Spring	Very hardy. Produces massive root systems.
Hairy vetch (L)	3	Late summer/fall	Spring	Slow to establish. Fairly hardy. Till under at bloom; can become a weed.
Winter wheat	4	Late summer/fall	Spring	Can be planted later than other cover crops.

*Will winter-kill in most years, leaving a “mat” of dead vegetation which can be planted through in spring or turned under.

**Sow late summer/fall crops from August 15- October 1, depending on location, species, and weather forecast.

*** Legumes, like crimson clover and hairy vetch take nitrogen from air and convert it into a form used by the plants. You can aid this natural process by purchasing an inoculant with your seed - *Rhizobia spp.* bacteria. You coat the cover crop seeds with the inoculant by mixing them together in a bag.

Reviewer: Raymond Weil, Ph.D., Dept. of Environmental Science and Technology, University of Maryland.

Author: Jon Traunfeld, University of Maryland Extension Specialist, Home and Garden Information Center

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