

## **Cover Crops for Gardeners**

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The Fort Braden Community Garden was begun on a field of pasture grass which had been mowed and maintained by the County for a number of years. Some gardeners built raised beds and filled them with materials of their choice. Others created traditional gardens in the ground, tilling up and removing the grass, and planting their vegetable crops.

The first crop on newly broken ground is often quite good. Regularly mowed grass supplies its own organic material from decomposition of clippings and old roots. Tilling relieves compaction resulting from repeated mowing and increases oxygen in the soil, allowing micro-organisms to flourish. Gardeners at Fort Braden Garden who grew in the ground found this to be true.

In subsequent planting seasons those who added no mulches or other organic material to their gardens and tilled the soil before each planting season found they had poorer crops and more problems from bugs and diseases.

Experience and research over the past 40 or 50 years has shown that simply taking from the soil with crop after crop, while adding fertilizers and without returning any organic matter to the soil results in disaster. Increased problems with pests, plant diseases, weeds, soil compaction and erosion have become common problems.

The nanos in our soil--micro-organisms of many types--feed on the carbon supplied by organic matter, processing it and making it available to our plants. The most important element for building healthy soil is adding organic matter. There are essentially three ways to do this—compost, mulch, and cover crops.

We hear a lot about mulching and composting, but cover crops, or green manure, are usually thought of as a farmer's tool. They are equally as appropriate for backyard gardeners. Cover crops can supply organic matter to sustain the soil-dwelling organisms, provide nutrients for subsequent crops, furnish habitat for beneficial insects and birds, and discourage weed growth.

Increased organic matter from decomposed cover crops also promotes greater water infiltration and retention, reduces soil compaction, regulates soil temperatures during the hottest months and prolongs the growing season in our hot humid summers.

So what cover crops should a gardener in our area grow and when?

Winter cover crops planted after fall harvest and before spring growing season include cereal grains such as rye or oats, crimson clover, and hairy vetch.

Summer cover crops planted after spring harvest and before the fall growing season include cowpeas and buckwheat, although buckwheat can be grown pretty much year around in our area. Leguminous cover crops such as cowpeas grown in summer provide partial nitrogen needs for leafy greens grown in the fall. Buy inoculated seeds which have been treated with a bacteria which assists legumes in fixing nitrogen.

If a soil test shows your soil needs particular nutrients, cover crops can be selected to help supply them. For instance, rye and oats provide potassium as well as suppressing nematodes, and buckwheat supplies phosphorus as well as discouraging diseases and harmful insects in subsequent crops. When allowed to bloom buckwheat also attracts a variety of helpful insects. More information on various cover crops and their benefits can be found at <http://edis.ifas.ufl.edu/hs389>.

Cover crop mixtures can also be used and seem to provide a unique interaction which increases benefits. Cover crops, like other crops, should be rotated, and not planted in the same place, year after year.

Cut your cover crops when they flower, and before seeds begin to form. About 50% flowering vs. budding is usually recommended. If seeds are allowed to form, the cover crops could develop into a weed problem.

The cover crop can be incorporated into the soil. This is sometimes recommended for leguminous cover crops to increase retention of the nitrogen produced by the crop. Most of the nitrogen produced by legumes dissipates within the first 30 days after cutting, so subsequent planting should be done before then. Tender crops like crimson clover will die naturally as weather warms and spring crops can be planted among the clover for best retention of nutrients.

At the VegHeadz Demonstration Garden at the Leon County UF/IFAS Extension, we usually prefer to cut cover crops and drop them in place, leaving roots undisturbed to provide resources for soil organisms, and pathways for water and air as the roots decompose. We then cover with mulch, such as oak leaves, to encourage decomposition in place. When dropped and mulched, the plant residue has mostly disappeared within four to six weeks. We try to time the planting of our cover crops so they have decomposed by the time we are ready to plant the next crop.

Just push mulch and any remaining residue aside and insert seeds or plants, a technique known as no-till gardening. The advantage to this method is that it's easy, soil organisms are not disturbed, and weed seeds in the soil (the seed bank) will not be exposed and activated, thereby reducing the amount of weeds competing with your vegetable crops.

Additional resources can be found at <https://edis.ifas.ufl.edu>. Search for publications hs389, hs390, aa217, and ag277.

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