Plant Cover Crops to Conserve & Enhance Garden Soil

Hopefully gardeners across the state of South Carolina have enjoyed a bountiful summer vegetable season. If you have, ensure future success by not letting your garden soil go fallow throughout the winter. Plant a cover crop or a mix of cover crops for their multiple benefits to your soil. Cover crops are an important part of any rotational system in the garden to reduce pest issues and improve soils. Cover crops are simply defined as a crop planted with its primary purpose to provide benefit to the soil and/or other crops without the intent of being harvested for feed or sale. The benefits of using cover crops in a rotational system are many-fold: they limit the erosion of soil; they can provide plant nutrients and/or make nutrients available to subsequent crops; they act to hinder weed growth; they feed the beneficial soil microorganisms by root secretion of proteins and sugars; they can provide nectar and pollen sources for beneficial insects; they are an important source of soil organic matter when used over time and can improve the physical properties of soil. The first step in planning a cover crop planting is to decide what one wants to achieve through the practice, and then decide which species will achieve that goal.

Just as with vegetables, different cover crops are planted at different times of the year based on their suitability for growth in warm or cool seasons. Cover crops are typically further classified by plant type: legumes and non-legumes.

Legumes, or members of the pea family, are used primarily for their ability to fix nitrogen thereby providing some nitrogen for the nutrition of subsequent crops. They also offer other benefits such as providing soil organic matter, building soil structure and crowding out weeds. Two easy-to-grow winter cover crops for South Carolina are crimson clover and Austrian winter peas. If you have never grown peas or beans in the garden before, then it is recommended that pre-inoculated seed be planted. This seed will be coated with a rhizobia bacterium per the species of legume, and then coated with clay to protect the bacteria. This bacterium is necessary for optimum growth and nitrogen fixing activity of the legume cover crop.

Crimson clover
George M. Dickert Horticulture/Natural Resources Agent—Spartanburg County Extension, Clemson University.

The non-legumes can be considered to be from two main groups: grains and brassicas (members of the mustard family). The grains are wonderful at sending roots down deep to scavenge for otherwise unused nutrients and for crowding out weeds. Given that these plants produce a sizable amount of plant growth, they also provide a lot of organic material for the soil after they are killed. For overwintering
the garden, consider using oats, winter wheat or cereal rye. There are two members of the mustard family that can also be successfully grown over the winter as a cover crop. Mustard and forage radish offer nutrient scavenging abilities, weed suppression and there is a growing body of evidence that they also act to suppress soil pest/disease issues. The forage radish is especially useful for alleviating compacted soils with its large taproot. This capability is commonly referred to as bio-drilling. The brassicas can be grown in tandem with a grain or a legume for a multitude of benefits.

In the fall, try to plant your cover crop about four to six weeks before a killing frost. Cereal rye is the most cold hardy of the winter cover crops and can be successfully planted late if time gets ahead of you. If you have never planted a cover crop before, start small with a combination of a legume and a grain. I would recommend a combination of crimson clover and winter wheat for beginners. The clover provides nitrogen; both will crowd out weeds and then can be turned into the soil in spring to provide soil organic matter. My recommendation is to mix a half a pound of crimson clover with three quarters of a pound of winter wheat to cover 1000 square feet. Cover crops can certainly be used in raised beds as well for their myriad of soil building benefits. Plant cover crops to replenish the garden soil, and the soil will in turn reward you with growing success.

One of the largest hurdles for home gardeners to use cover crops is the question of what to do with all of that plant material in the spring? Most cover crops have traditionally been cut with a flail mower and plowed into the soil. However, in home gardens they can be cut, chopped or pulled. A lawn mower or string trimmer works well to cut them, and they can either be left on the soil surface and planted into as a mulch, turned into the soil, or removed and composted to be added back later. Gardeners should be aware that if a cover crop is to be incorporated into the soil, a period of two to three weeks should be observed before planting into the soil in order to allow the material to decompose. The decomposition process can tie up available nitrogen, and create an environment unsuitable for plant germination and growth. It is also important to keep the timing of the cover crop kill in mind to reduce any subsequent unwanted reseeding. In general, cut, chop or mow legumes when they are about halfway in flower, and grains when they start to produce seed heads.