

Cover Crops in Vegetable Gardening



By Mark S. Brunell, Master Gardener

Cereal rye (*Secale cereale*) grown in the home garden promotes improved soil quality with its deeply penetrating roots.

As the end of the warm season approaches, vegetable gardeners are busy finishing the harvest and perhaps thinking about what new varieties to try for the next crop.

Many will attempt a cool season garden; however it is probably correct to say that most gardeners will allow their vegetable beds to sit dormant over the winter. Such beds could benefit from a cool-season cover crop, and likewise warmseason cover crops could be grown on dormant beds in the summer. In general, whenever beds are not in use, and a suitably large window of time exists before the next crop is planted, cover crops can be grown to help improve the soil, and provide other benefits.

Home gardeners can learn from farmers who use cover crops when their soil loses fertility and structure after growing many crops. Since most cover crops are legumes, which add nitrogen to the soil (a primary plant nutrient), one might think that the farmer would grow a cover crop for this reason, but in reality applying synthetic inorganic fertilizers is cheaper than growing a cover crop, so nitrogen is not the motivating factor. Instead, the farmer goes to the expense and trouble of planting a cover crop to increase soil organic matter, water permeability, soil pore spaces, nutrient-holding capacity, and to improve soil structure.

In addition, cover crops have other benefits such as weed control, reducing soil-borne diseases and nematodes (parasitic worms), erosion control, dust control, reduction in muddy areas allowing for farming activity during wet weather (when planted in walking aisles), attraction of beneficial insects and spiders, attraction of beneficial nematode worms, and also a means of trapping nitrate residues left over from fertilizing the previous crop. A farmer will usually grow a cover crop until it flowers, and then incorporate the crop into the soil by rototilling or disking. In several weeks, microbial decomposition of the cover crop residue will lead to improved soil quality.

A cover crop provides the same benefits to the home gardener; and, for organic or organic-leaning gardeners, the nitrogen provided by the legume cover crops is a major advantage. The home gardener can simply cut the cover crop and dig it in, but this can create a short-term nitrogen deficiency in the soil. Cutting and composting the aboveground plant biomass may be preferred; once composted the organic material can be incorporated into the

garden beds by forking or spading. Large taproots formed by the cover crop can be pulled out (a conventional or stirrup hoe works well), with the smaller roots staying in the soil, providing organic matter.

Commonly grown cool-season cover crops, generally planted in the fall after the summer crop is finished, include legumes like clovers (berseem, rose, and crimson), field peas, sweet clover (Hubam), and the vetches (common, hairy, smooth, Lana are common examples). The familiar fava bean can also be used as a cover crop, but in this capacity a small-seeded version called the bell bean is generally used, with higher yield of biomass. Although not supplying large amounts of nitrogen, some cereal grasses can greatly improve soil quality with their deeply penetrating roots. These include barley, oat, rye, and wheat. Other non-legume cool-season cover crops are the mustards, which have a deeply penetrating taproot. For the warm-season, the following legumes are commonly used: alfalfa, cowpea, soybean, and sweet clovers (white and yellow). For the grasses, the choices are more restricted with Sudan grass being most common. Finally, buckwheat is another choice for the summer. It has the added benefit of abundant flowers over a long period for attracting pollinators. In Alameda County, gardeners in coastal areas could grow cool-season species much of the year, but inland areas do not have such flexibility.