



---

## Cover Crops

When the growing season starts to wind down, it's a great time to evaluate the successes and failures in the vegetable garden and to get to work on improving soil structure and fertility for next year's crops. Too often the failures are attributed to weather related factors or to the varieties that were planted. While these are important issues, soil structure and fertility are even more important.

One of the easiest and most effective ways of accomplishing these tasks is to plant a cover crop. In simplest terms, a cover crop is a plant grown for the purpose of preventing erosion, improving soil structure, maintaining or improving soil fertility, and suppressing weed growth and certain soil-borne plant diseases.

There are many plants can be used as cover crops. The focus here is on cover crops that can be planted in late summer in Massachusetts' gardens.

**Winter rye** is the most commonly used cover crop in Massachusetts. The seed are inexpensive and readily available at most garden centers or farm supply stores. Seeding rate for winter rye is about 2 to 4 ounces per 100 square feet of garden area. Winter rye germinates quickly and grows well in cool fall weather. It survives the winter and continues to grow in spring, adding lots of organic matter when tilled into the soil.

Tilling should be done as early as possible in spring; in other words, when the soil is no longer wet. Waiting too long to turn under this cover crop will delay the time of seeding of vegetable crops since it takes about two weeks for winter rye to decompose. During decomposition, microbes use soil nitrogen to break down the rye, thus creating a temporary nitrogen deficiency for any crops that may have been planted. Also, if winter rye is allowed to grow too far into spring, it becomes more difficult to turn under and it takes longer to decompose. It may be necessary to mow winter rye before turning it under if it has gotten too tall.

**Winter wheat** is used in a similar fashion as winter rye but may only be available at farm supply outlets rather than garden centers. It is not as adaptable as winter rye in garden soils that drain poorly and are very acidic. Other than that, seed it at the same rate as winter rye and till it in next spring as early as soil becomes workable.

An easier cover crop to deal with than winter rye or winter wheat is **oats**. Oats should be seeded in August or as early in September as possible at a rate of 4 ounces per 100 square feet. Like the rye and wheat, it germinates quickly and gets established quickly. However, unlike the other two cover crops, it dies with the onset on frigid weather. Therefore, it is critical to seed this cover crop early. Because the oats are already dead in spring, turning under this cover crop is much easier than with the living plants of winter rye or winter wheat. This can be important to someone without a tiller. Oats can be easily turned under using a garden spade or fork. On the downside, oats produce less growth and therefore contribute less organic matter to improve soil structure than the rye or wheat.

Another winter-killed cover crop is **annual ryegrass**. Seeded at a rate of 2 ounces per 100 square feet, annual ryegrass should be planted as early as possible in late summer. In a mild winter, it may survive and continue growing in spring. If this should happen, it should be tilled under before seed heads are produced. Mowing may be required before tilling if the ryegrass has gotten too tall. Annual ryegrass may be better planted in spring as a green manure crop in areas of the garden that will be fallow for awhile. A green manure crop is similar to a cover crop except that it is always turned under while it is still green, which may or may not be the case for a cover crop.

A non-grass type of cover crop for fall planting is **hairy vetch**. Being a legume, hairy vetch can remove nitrogen from the atmosphere, incorporate it into its biomass, and then release the nitrogen to the storehouse of plant nutrients in the soil as it decomposes. Usually, hairy vetch is combined with winter rye or with oats and is seeded in August through September. The seeding rate for hairy vetch is 3 to 4 ounces per 100 square feet. It may be difficult to find seed for hairy vetch other than through mail order catalogs. Since it forms a dense growth, tilling hairy vetch in spring can be a problem and mowing prior to incorporation into the soil is a must.

When seeding any cover crop, soil should be prepared as for planting any crop; *i.e.* adjust the pH by adding limestone if necessary, spread some fertilizer (*e.g.* 10-10-10 at a rate of one to two pounds per 100 square feet), and then till the soil. This is easy for garden areas where crops have already been harvested. However, where there are still crops in the garden, plant the cover crops in the aisles between rows of vegetables.

As a general rule, cover crops should be planted about 30 days before the first expected frost date. This is especially critical for oats and annual ryegrass. Winter rye and winter wheat may be planted a little closer to that date since much of their growth will take place in early spring.

Planting a cover crop in fall may be the best way to insure a productive vegetable crop in the following year.

---

Ron Kujawski  
UMass Extension Specialist, Agriculture and Landscape Program 4/09