



# ***Environmental Horticulture Notes***

**EHN 87**

## **COVER CROPPING IN HOME VEGETABLE GARDENS**

### **WHAT IS A COVER CROP?**

A cover crop is a crop that is planted for the purpose of improving soil quality and nutrition, and/or for attracting beneficial insects. A cover crop that is planted in the fall and tilled under in the spring, or that is planted in the summer, is often referred to as a “green manure” crop.

### **BENEFITS OF COVER CROPPING**

- Addition of nitrogen
- Improved soil tilth and water penetration
- Addition of organic matter

### **DRAWBACKS OF COVER CROPPING**

- Cannot grow vegetable crops in that space
- Seed can be difficult to find
- Requires chopping and turning under

### **SELECTING A COVER CROP**

The choice of cover crop depends on the main benefit you are hoping to obtain from the cover crop. A primary benefit in a garden is the addition of nitrogen, in which case legumes would be used. For an upright cool-season cover crop that is easy to cut down in the spring, use bell beans or fava beans. The large, round, flat-seeded “horse bean” or fava bean plants are nearly identical to bell bean plants, but bell beans are usually planted as a cover crop because the seed is smaller and therefore cheaper. Of course, you can use fava beans as a cover crop, but remember that a fair amount of nitrogen (in proteins) will be removed when you harvest the seed, making less available for the succeeding crop.

For extra nitrogen, use a mix of bell beans, common vetch, and peas. The vetch and peas are trailing, so they need to be cut into small pieces before incorporation or they will wind around the tines on the rototiller. If your main interest is in building organic matter, use cereals, such as oats or barley, but remember that their incorporation will make nitrogen in the soil temporarily unavailable to the succeeding crop unless extra nitrogen is added. For both nitrogen and organic matter, use a mixture of legumes and cereals.

Cover crops are typically grown in the fall, but warm-season cover crops can be grown during the heat of summer. Warm-season legumes include soybeans and cowpeas (known as black-eyed peas); warm-season non-legumes include buckwheat and sudangrass. Warm-season cover crops are an excellent management tool for controlling weeds and providing a habitat and food for beneficial insects. For additional nitrogen in the summer, use soybeans or cowpeas. Buckwheat is a broadleaf plant that grows densely and quickly smothers summer weeds. It grows to maturity in 30 to 45 days, so more than one planting can be sown in one summer; it grows easily in almost any soil. Sudangrass is a fast-growing tall summer annual grass that provides significant organic matter and quickly smothers weeds.

### **INOCULATING LEGUME SEEDS**

Specialized bacteria on the roots of legumes take nitrogen from the atmosphere (78 percent N) and “fix” the nitrogen in nodules that the bacteria create on the roots. In order to ensure that this fixation occurs, and that maximum growth takes place, it is important to attach the bacteria to legume seeds before planting. So when purchasing seeds, also buy an “inoculant” that contains the bacteria in a peat moss base. Be sure to use an inoculant that is appropriate for the legume(s) to be planted. Different strains of the bacteria work only on specific plant species. For example, cowpeas, soybeans, and fava beans/vetch/peas each need a different inoculant. Use at a rate of at least 1 ounce per 10 pounds of seed. To help the inoculants adhere to the seed, mix 9 parts hot water (non-chlorinated) with 1 part corn syrup (10 percent solution), let cool, and add a small

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amount of this solution to the seeds. It is even advisable to inoculate peas and beans that are to be planted for the purpose of harvesting, such as snow peas and string beans.

Because the bacteria are alive, the inoculant should be kept in a cool, dry place and used prior to the expiration date on the package. If kept refrigerated, it may last a little beyond that date. Coat the seeds with inoculant immediately before planting; do not leave the inoculated seed in the sun prior to planting.

## **WHEN TO PLANT AND ROTOTILL THE COVER CROP**

Cool-season cover crops are usually planted from late September through late October. If the cover crop will be incorporated in late February or early March, such as for early tomato planting, sow the cover crop in September or early October. If it can be allowed to grow well into April, such as for planting corn, the cover crop will put on most of its growth in the spring, so it can be planted in late October. The cover crop is incorporated into the soil about 3 to 6 weeks before the spring crop is to be planted. Do not plant seeds into soil in which the cover crop has been freshly incorporated because soil-borne diseases, such as *Pythium* and damping-off, may be more infective and because soil nitrogen may be “tied up,” or unavailable.

Warm-season cover crops need to be planted after the soil has warmed to at least 60°F and the likelihood of frost has passed (usually May in the Sacramento area). They should be tilled or forked into the soil when flowering begins; for buckwheat, that is about 30 days after germination. Buckwheat can become a weed if allowed to go to seed, so cut it down soon after it starts flowering. The hollow stalks of buckwheat are easy to cut and dig back into the soil, and the residue decomposes quickly. Buckwheat also accumulates insoluble phosphorous and, when turned under, releases it into the soil in a plant-available form.

Larger species of both cool-season and warm-season cover crops should be clipped into small pieces before incorporating into the soil.

## **HOW TO PLANT**

A good seedbed should be prepared by rototilling and raking, however, if soil was rototilled in the spring, it may not be necessary to rototill again for a fall-planted cover crop. The seed can be scattered on the ground and then raked in, or planted in rows or on beds. The legumes and grasses discussed above should be planted about ½ to 1½ inches deep. After planting, sprinkle thoroughly and be sure to keep the top of the soil moist for up to a week to ensure that seeds receive continual moisture; however, the soil should be well drained. It helps to lightly cover the bed with leaves or straw to keep moisture in, but be sure not to introduce weed seeds. When weather is warm and/or windy, daily watering may be necessary. Use these seeding rates (per 100 square feet): bell beans, 5 ounces; cereals and bell bean/pea/vetch mix, 4 ounces; soybeans and cowpeas, 4 ounces; buckwheat, 4 ounces; sudangrass, 2 to 3 ounces.

## **IRRIGATION AND FERTILIZATION**

It is usually best to provide additional irrigation after germination, although it is not necessary to keep the top of the soil moist at all times. Remember that young plants need more frequent watering, whereas older plants need deeper watering. If there is little or no autumn or spring rainfall, weekly watering may be necessary. During the winter, no irrigation is necessary if rainfall is normal. Warm-season cover crops will need supplemental irrigation for survival and growth. A cereal cover crop usually benefits from nitrogen fertilizer (organic or chemical) at planting, but legumes and legume/cereal mixes should not be fertilized. If weeds are present, remove them or rototill them in early spring to prevent them from going to seed.

## **SOURCE OF SEED AND INOCULANTS**

Cover crop seed and inoculants are available at some retail nurseries in October each year; call around to see who carries them. Perhaps the largest selection can be found at Peaceful Valley Farm Supply, P.O. Box 2209, Grass Valley, CA 95945 (530) 272-4769, email: [contact@groworganic.com](mailto:contact@groworganic.com), web: <http://www.groworganic.com/>.