

# Growing an Organic Garden—The Fundamentals

## Defining Organic Gardening

The term “organic” is regulated in the United States. In order to sell products as organic, farmers and processors must use production and handling practices contained in the National Organic Standard, a set of rules developed by the United States Department of Agriculture as part of the Organic Foods Protection Act of 1990. The National Organic Standard can be viewed in English, Spanish, Japanese and French at <http://www.ams.usda.gov/nop/NOP/standards.html>.

Prior to the implementation of the National Organic Standard in October 2002, discrepancies existed about what production and handling practices could be used for producing organic products and in some cases products were sold as organic that were not. So, the National Organic Standard was created to clarify production and handling procedures and strengthen the credibility of organic products. Additionally, organic producers and processors must become certified (an exception exists for growers producing less than \$5000 worth of organic products per year). This means that a certifying agency, or third party, must confirm that farmers are following the National Organic Standard.

For this fact sheet, organic gardening is defined as gardening based on the production practices in the National Organic Standard and pursued by noncommercial growers. If you plan on selling what you grow as organic, this fact sheet is not for you, as you must strictly adhere to the National Organic Standard.

## Organic Gardening Practices

Organic gardening practices work with nature as much as possible. For example, plant nutrients are met primarily from natural sources, including composts, green manures and fresh manures, rather than

synthetic chemical fertilizers. Other practices are described below.

## Site Selection

Choose the site for your organic garden carefully. The garden site will affect all other gardening practices, so select the best site possible to grow healthy plants. When deciding on a site, consider light exposure, soil drainage, soil fertility and pesticide contamination.

A good site receives a minimum of 6 hours of full sun each day. Pick a site with good drainage by keeping clear of soils where water pools for long periods of time. This is important for avoiding plant diseases, particularly root rots.

Finally, pick a spot with good fertility. If other plants are growing healthily in the site, it likely has good fertility. A soil test can be collected to more accurately determine the fertility status of the soil (kits for soil tests can be obtained from local county Extension offices).

Also, on some sites there is a greater chance of contamination from pesticides that are not allowed in organic production than on other sites. It's best to avoid those sites. For example, if your neighbor's lawn is free of weeds while yours has dandelions, this might be an indication that your neighbor is using an herbicide prohibited in organic production. In that case, avoid planting near the property border shared with your neighbor.

## Organic Seed

Organic seed is produced using practices that follow the National Organic Standard. Organic seed is currently limited in the marketplace and there are more cultivars of some types of plants to choose from than others, such as with tomatoes. Organic seed can be found in many garden centers and seed catalogs. If organic seed cannot be found, consider using untreated seed. “Untreated” means that pesticides

have not been applied directly to the seed. Untreated seed is commonly available through seed suppliers.

## Fertilizing

The philosophy behind soil fertility for organic gardening is different than for conventional gardening. In organic gardening, the strategy is to feed the soil and the soil in turn will feed the plant. In conventional gardening, fertilizers are used to directly feed the plant. One goal of managing soil fertility in organic gardening is to increase organic matter content of the soil. Soil organic matter serves as a source of nutrients for plants, creates a habitat for beneficial soil microorganisms and improves the soil structure. Composts, green manures and fresh manures can be used alone or in combination to improve the soil organic matter content and increase soil fertility.

Many local municipalities have composting facilities where composts can be obtained for a nominal fee or, in some locations, for free. Composts can also be purchased from garden centers. Making your own compost is a great option, if you have a location to do it, because you can control what the compost is made from.

You can also improve the soil by growing green manures. Green manures are plants that are incorporated into the soil before or just after flowering while they are still young, green and succulent. As they break down, nutrients are released into the soil that can be used by subsequent plants grown in the site. Many types of green manures are available and can be used for different purposes including adding nitrogen to the soil, increasing the soil organic matter content, suppressing weeds and scavenging soil nutrients.

Fresh manures can be tricky to use because they can contain high nitrogen and salt levels that can negatively affect plants. Additionally, disease-causing organisms can be present in manures, which can contaminate edible products from the garden. For these reasons, use caution with manures. When organic farmers use fresh manures, they must incorporate it into the soil a minimum of 120 days prior to harvesting from crops with the edible portion in contact with the soil (e.g., strawberries or squash). If they are growing crops that do not have the edible portion in contact with soil (e.g., blueberries or staked or caged tomatoes), they must incorporate manure into the soil a minimum of 90 days prior to harvest.

Organic farmers cannot use sewage sludge. These are good guidelines for organic gardeners to follow. You can also adopt crop rotations that more efficiently use nutrients in the soil. Do this by rotating plants that are heavy nitrogen users (e.g., lettuce or sweet corn) with plants that can add nitrogen to the soil (e.g., beans or peas). Another strategy is to rotate plants that use a large amount of different nutrients. For example, melons are heavy users of phosphorous, while garlic uses potassium heavily. Another strategy is to rotate deep rooted plants (e.g., potatoes) with shallow-rooted plants (e.g., onions). Fertilizers can also be purchased that meet the requirements of the National Organic Standard. These can commonly be found at garden centers or through gardening catalogs. To locate products in garden centers, ask personnel which products are used in organic production. Gardening catalogs will typically identify a product as allowable in organic production.

## Pest Management

In organic gardening, pests are actively managed. The goal is to avoid pest outbreaks primarily by using cultural strategies. This is compared to the reactive strategy of applying pesticides after a pest outbreak has occurred. In organic gardening, the first line of defense against pests is preventative strategies that make the plants or environment less desirable to the pest. Strategies are numerous and dependent on the target pest. They include the following:

### Selecting good sites

- Selecting cultivars with resistance or tolerance to target pests
- Maintaining healthy and vigorous plants with good nutrient and moisture management
- Promoting good air circulation within the garden to promote drying of the plants
- Using good sanitation practices for tools and equipment
- Rouging or removing plants that are diseased
- Using crop rotations to avoid the build up of pests
- Creating habitats for beneficial insects
- Hand weeding
- Mechanical weeding
- Using organic (e.g., straw or bark chips) and inorganic (e.g., plastic) mulches

Biological control or the use of predatory insects and fungi are other options for pest management, as are chemicals that can be purchased which meet the criteria in the National Organic Standard. Organic gardening can require more time in fertility and pest management compared to conventional gardening. However, organic gardening can be more environmentally sound and a very satisfying way to garden.

The Horticulture Fact Sheet series is produced for home gardeners and professionals by the Consumer Horticulture Center at Penn State. The complete series is available on the Web at [www.hortweb.cas.psu.edu](http://www.hortweb.cas.psu.edu).