

# Planting in the Ground

## Overview

Gardeners begin each new season with high expectations. We want lots of flowers and lots of edibles. Especially tomatoes!

The secret to growing bountiful harvests is within reach whenever a few basic guidelines are followed.

It all begins with a suitable site. Then prepare the soil, and follow up with appropriate watering and fertilizing. Then, too, select plants well suited to your site's conditions of sunlight and/or shade.

In general, flowering plants and fruiting vegetables require at least 6 hours of sunlight daily while such leafy edibles as lettuces, spinach and chard can do well with fewer hours or even with bright shade. It seems that exceptions always exist, so verify the requirements for your choices.

## Prepare the soil before you plant

To prepare the planting bed, begin by removing weeds, rocks, and any other debris. Then, know that whatever kind of soil you have, be that sandy or clayey, it can be improved by mixing in lots of organic matter. After you've mixed in the compost, level the area, then rake in a starter dose of all-purpose fertilizer to give your seasonal plants a jump start.

Mixing in a goodly amount of compost provides the magic everyone wants for their soil. Two inches is considered a minimum amount to mix in, but more is better. Although it's true your plants will grow if you skip this step, mixing in compost helps ensure they will be vigorous and well able to produce the bountiful harvests you expect.

Follow these guidelines to success:

- For annual flowers and vegetables: Amend the planting bed by mixing 2 to 4 inches of compost into the existing soil.
- For lawns, groundcovers and flower beds: Amend the entire area by mixing 2 to 4 inches of compost into the existing soil. In this case, 4" is the better choice because these are long-term plantings. To do so, mix in 2", then 2" more.
- For trees and shrubs: Don't mix compost into the planting hole. Instead, use the compost as a 2-inch deep mulch on the soil surface after you plant the tree. Extend the mulch 30 inches outward from the trunk but don't touch the trunk's bark.
- For established perennials, shrubs and trees: Apply 1 to 2 inches of compost as a mulch on the soil surface.

## A guideline to determine the amount of compost required to amend soil:

1 cubic foot	=	1" over 10 sq. ft.
1 yard	=	27 cubic feet
1 yard	=	3" over 100 sq. ft.
3 yards	=	1" over 1000 sq. ft.

For instance, to apply compost 2 inches deep over a garden area of 10 square feet, you will need 2 cubic feet of compost. Mix well with your native soil to the depth of one shovel. In other words, to about 6 to 8 inches deep. If you plan to add 4 inches total, mix in just two inches at a time.

It's important to know that mixing in less than 2 inches of compost won't improve your soil nor will it benefit your plants. You waste your time, effort, and money.

Any compost is fine – homemade, bagged, or bulk. You can locate a bulk supplier in the Yellow Pages under such headings as Soil or Bark Dust.

## Improve drainage

Most folks with clay-based soils will need to improve drainage. Although mixing in lots of compost is a beginning, some of our clay soils will benefit further if you make raised beds, with or without a rigid edge or border. Consider 8 inches as a minimum height but realize that higher would be even better.

Sometimes soil conditions are such that you may need professional assistance to improve drainage.

It's useful to know that gypsum improves drainage only when soil contains high levels of sodium. This occurs in clays which normally have sodium in their structure, and when soil is irrigated with water softened by a sodium-exchange device. Gypsum doesn't improve drainage in our clay soils because they're in a different category (alumino-silicate clays) unless, that is, you use softened water.

## Adjust soil pH

In order to successfully grow plants in your garden and landscape, you also need to consider pH, a chemical reaction of the soil water which determines whether or not fertilizer elements can be absorbed by roots.

pH is measured on a scale from 0 to 14, with the "best" pH for the majority of commonly grown plants

considered to range between pH 5.5 and pH 7.5. The exceptions to this are rhododendrons (about pH 5.5) and blueberries (about pH 4.5).

The average pH of local soil is about pH 5.5 to 5.8; in other words, somewhat acidic, but quite close to what's good for the majority of plants.

### **Test the soil**

If you want to do your own pH test of your soil, know that do-it-yourself kits from the garden center can give you a ballpark figure, as long as you use a fresh kit.

But if you suspect a serious problem in the soil, a professional lab test is much more precise. Such tests go beyond pH to determine the amount of phosphorus, potassium and more. Nitrogen is seldom, if ever, tested or reported.

These two labs report soil tests in the same manner as used in OSU publications:

- A&L Labs, Tigard, OR 503-968-9225
- Agri-CHECK, Umatilla, OR. 800-537-1129

### **To change pH**

In our region, the general practice is to lime the soil in the fall of every 2<sup>nd</sup> or 3<sup>rd</sup> year in order to increase the soil pH to a range suitable for the majority of plants. The average amount of lime to use is 50# per 1000 sq. feet. Agricultural lime is the form most commonly used but, if your soil is quite sandy, dolomitic lime is a better choice because it also supplies magnesium.

If you want to substitute wood ashes for the lime, apply far less, about 15 to 25# per 1000 square feet. Proceed with caution because wood ashes are inconsistent in strength.

After adding lime or wood ashes, wait at least 3 weeks before fertilizing to avoid nitrogen loss.

If you need to decrease pH by a relatively large amount, such as you might need to grow blueberries, mix agricultural sulfur into the soil. Mix in the first dose

the fall before you plant your bushes, then follow up every 2 to 3 years by lightly scratching additional sulfur into the surface soil around the bushes. On average, apply 50# per 1000 square feet.

Contrary to popular wisdom, gypsum doesn't change soil pH.

### **Irrigate and fertilize**

When you put transplants in the ground, be certain that both the root balls and the soil are moist. To settle the soil around the transplants' roots, water with soluble fertilizer diluted to half-strength.

Follow up care requires providing adequate water and fertilizer. Your goal is to keep seasonal plants moving at top speed so that they produce the abundant yields you expect. Early on, you'll need to water the area of the root ball often because new roots haven't yet extended into the surrounding soil.

Each and every irrigation should moisten the entire root zone of your plants. An average for established plants is 8 or 10 inches deep for lawns, 12 to 15 inches for flowers and vegetables, and 3 to 4 feet for most trees and shrubs if soil conditions allow.

Be aware that wilting, even if mild, damages plants permanently, with seasonal plants being particularly sensitive to the water shortage. The result is that flowering plants won't have as many blossoms as they might while vegetable harvests will be skimpy.

Choose an all-purpose fertilizer for your seasonal flowers and vegetables, then apply it according to label directions. Perennials typically get by with little to no supplemental fertilizer.

Ornamental trees and shrubs typically do just fine without supplemental fertilizer as long as you provide a mulch of compost that's maintained at several inches deep. If new growth is between 12 and 18 inches each year, don't fertilize. If you do fertilize, spread a nitrogen fertilizer on the ground under the canopy and within the dripline, then water thoroughly.

### **Additional information**

Oregon State University publications are available at your county's OSU Extension Service office.

Some publications are available online at <http://extension.oregonstate.edu/gardening>

*Sustainable Gardening* (EM 8742; This is the OSU Master Gardener Handbook)

*Gardening with Composts, Mulches, and Row Covers* [EC 1247]

*Growing Your Own* is an 8-page tabloid with generalizations for growing flowers and vegetables.

*Grow Your Own* is an 11-part series with the topics beans & peas; cabbage; cucumbers; leafy veggies; peppers; potatoes; sweet corn; rhubarb; root veggies; tomatoes; and vegetable sprouts.

*Understanding Nitrogen Fertilizers* (EC 1492)

*Using Nitrogen Fertilizers Wisely* (EC 1493)

*Fertilizing Your Garden: Vegetables, Fruits and Ornamentals* (EC 1503)

*To obtain more gardening information, contact your local OSU Extension Office.*

*Or go to the OSU Extension's Gardening Encyclopedia at <http://extension.oregonstate.edu/gardening>.*

*Clackamas County Master Gardeners 503-655-8631*

*Washington County Master Gardeners 503-725-2300*

Also look for OSU Master Gardeners at Farmer's Markets and County Fairs.