Preparing your Garden Beds

The empty garden is the virgin canvas awaiting your artistic creation. Just as any artist first prepares the canvas, so you will prepare the garden. Now it's time to get your hands dirty. While technically, not a part of garden design, an ill-prepared garden bed will frustrate all other attempts at preserving a healthy garden.

Equipment:

What you'll need will depend on the shape of your garden, the condition of your soil, and whatever materials you'll need for outlining or creating paths through your garden . You'll also need any seating or garden art that you wish to place in or around the garden.

- Handheld laser pointer or long straightedge
- Rope or twine and stakes (for gardens with straight edges)
- Long garden hose (for gardens with curves)
- Shovel
- Tiller (optional)
- Topsoil
- Water retention crystals (optional, but essential if your area is drought prone)
- Compost
- Mulch

Outlining Your Garden

You'll outline your garden differently depending on whether you're creating a curved garden or one with straight edges.

Outlining Gardens with Straight Edges

1. Place the first stake and measure the first straight line with a handheld laser or long straightedge.

2. Place the second stake.
3. Repeat until you've placed all the stakes.
4. Outline the garden by stringing heavy twine around the outside of the stakes.

Outlining Gardens with Curves

The easiest way to outline a garden with curves is to use an old-fashioned garden hose. It's much easier to use than heavy twine, and it's easy to make adjustments as you outline the garden.

Clearing the Garden Bed

Chances are the area you're clearing for the garden contains grass and weeds. Some people just till the area hoping the seeds will somehow disappear. Not a chance. You'll pay dearly as the season progresses by taking this shortcut. There are only two ways to clear the garden bed of grass and weeds:

1. Clear them.
2. Kill them.

Clearing the Garden Bed the Easy Way

You can painstaking clear the bed if you like, using a shovel to clear the top soil with the grass and weeds. There's a much simpler way to create a new garden bed: smother the offending grass and weeds.

Equipment:

- Newspaper
- Leaves
- Topsoil
- Vermiculite or perlite
- Compost

To kill the grass and weeds and prepare the soil:

1. Dig at least six inches deep around the outline and remove the garden hose or stakes and twine.
2. Cover the entire garden bed with at least four pages of newspaper.
3. Water thoroughly until all layers of newspaper are waterlogged.
4. Cover newspaper with a thick layer of leaves.
5. Water thoroughly again.
6. Top with a minimum of eight to ten inches of topsoil.

7. Add water retention crystal if you live in an area prone to dry summers.
8. Add vermiculite or perlite, and work the amendments into the soil.
9. Work the compost into the soil.

If you've never heard of this method, you'll be surprised at how well it works if you try it. The more layers of newspaper you use, the fewer weeds you'll find poking through. Onions will always poke through, but you'll find that you rarely have to spend more than a few minutes weeding the garden.

You can add newspaper, leaves and little mulch each fall. The newspaper will begin to disintegrate over the winter, but you'll find that spring weeding is a breeze.

Testing and Correcting Soil pH

After clearing the garden area, the most important task is to prepare the soil. The soil is to the garden what the foundation is to the house. Ensuring proper soil pH is the most important thing you can do to ensure healthy plants. (We take for granted that you'll water your plants regularly.)

After the first year, you realize that your new garden isn't living up to your expectations, falling far short of those slick photographs in the catalog. Or, perhaps your established garden has been on the decline over the past few seasons for no obvious reason. We weren't kidding when we said that a proper soil environment was the key to a healthy garden.

Unless you've neglecting your garden's basic needs, the culprit may be the soil pH level. The pH level indicates the availability of essential nutrients (nitrogen, phosphorous and potassium) to your plants. Adding fertilizer to soil with a pH imbalance is useless; the nutrients in the fertilizer are not available to the plants. An inhospitable pH factor can throw your entire garden out of kilter. It's like building a house on a faulty foundation.

You don't need a chemistry degree to understand pH, and you don't need to be a chemist to adjust the soil pH factor to achieve results in your garden. We'll give you a quick overview of pH, show you how to determine your pH and provide general guidelines for adding amendments to your soil to normalize the pH level.

What is pH?

All matter is either acidic or alkaline. pH (potential of hydrogen) measures the absence or presence of hydrogen ions in matter. A high concentration of hydrogen results in a low pH, while a low concentration of hydrogen results in a higher pH. Yes, it does sound backward!

Vinegar and lemon juice have a high acid content and are referred to as acidic. Baking soda and ammonia are alkaline substances. The pH scale ranges from 0 to 14, with a pH of 0 assigned to the most acidic substances and a pH of 14 assigned to highly alkaline substances. A pH factor of 7 is neutral, so a factor of greater than 7 indicates the substance is alkaline and a pH factor of less than 7 indicates alkaline matter.

Testing the Soil to Determine pH Level

The only way to accurately determine the pH level of your soil is by testing it. There are three ways you can test your soil:

- **DIY -** Purchase a do-it-yourself-kit at any lawn and garden center. Follow the manufacturer's instructions. This is the least costly method, and some kits include charts and general recommendations. You'll also find a toll-free customer support telephone number included with most kits. DIY pH testers include litmus paper, pH meters, and kits including test tubes and chemicals. Discuss your needs, knowledge level, plants and cost constraints with garden center employees to determine which testing method is best for you.
- **Contact your county university cooperative extension service –** Extension services are the best return you'll ever receive on your tax dollars. Part of their mission is to educate areas gardeners. Contact them for instructions on sending soil samples, and for a nominal fee, you'll receive a list of recommendations, based on the analysis. The advantage of using your county extension service is that they are more familiar with local soil and growing conditions than a lab located half-way across the country. You can follow up by telephone and receive unlimited free help on almost any gardening matter from experts—priceless.
- **Commercial laboratory testing -** This is the most expensive form of pH testing, but labs usually test for a variety of factors, not just pH levels. Perform an Internet search to compare features and costs. You'll receive an in-depth report from commercial labs, but you may not receive the same level of hand-holding as the extension services provide.

Collecting Soil Samples for pH Analysis

The pH analysis is only as good as your soil sample. The results of the test depend on when, where and how you collect the soil. A faulty analysis can cause you to add unnecessary or improper amendments, wasting money. Wait until conditions are right to gather your samples.

When to sample the soil

You can take soil samples any time of the year, but no later than a couple of months before spring planting. Additionally:

- Collect samples before adding fertilizer or organic matter.
- Collect samples when the soil is relatively dry; otherwise, air dry the samples.

Equipment for Sampling Soil

Before you start, gather your equipment. All equipment must be meticulously clean and free from any chemicals. Leftover chemicals will affect the pH analysis and render a faulty reading. You'll need:

- Stainless steel soil probe, spade, garden trowel or bulb auger
- Plastic bucket
- Plastic bag (or whatever container the lab has supplied to hold the final sample)

Collecting the Composite Soil Sample

You'll need one composite sample for each area of use. Each composite sample requires 10 or more mixed samples. Collect separate composite samples for flower gardens, vegetable gardens and lawn. If you have two vegetable gardens with different vegetables, collect two composite samples. If you have a perennial garden in one area of your yard and a hybrid rose garden in another, collect two composite samples. To ensure an accurate composite sample, don't touch the soil. The pH in your body can affect the analysis.

1. Brush aside any loose debris before digging.
2. Dig 10 (or more for larger areas) samples of soil from different areas of the garden to a depth of at least six inches.
3. From each sample, remove a one-inch core of soil and add to the plastic bucket.
4. After you've added all of the samples to the bucket, sift through the soil with a clean trowel and remove any foreign objects such as pebbles, sticks or insects.
5. Crumble the remaining soil with the trowel and mix thoroughly.
6. If the soil is damp, spread it on clean plastic or newspaper and allow it to air dry.
7. Add the mixed soil to a clean plastic bag or other container for testing. You'll probably need less than a cup for each sample, but follow the instructions on the kit or from the lab.

Amending your Soil

In general, the most hospitable pH range for plants lies between 6.0 and 7.0. Note that pH numbers increment by a factor of 10: a pH of 7.0 is 10 times more alkaline than a pH factor of 6.0. Unlike mulch, which lies on top of the soil, work amendments into the soil to a depth of approximately 10 inches so that the roots benefit from the amendments. Always work amendments into the dry soil to avoid compacting the soil.

Amending Acidic Soil

A pH level above 7.0 is usually too alkaline. To lower the pH and add acidity, add sulfur to the soil.

Amending Alkaline Soil

A pH level below 6.0 is usually too acidic. To raise the pH and make the soil more alkaline, add lime to the soil.

Beyond pH – Adding Nutrients to Soil

When testing the soil pH, you may find that the soil is deficient in one or more nutrients. After you've corrected the soil pH, nutrients in the soil become available to the plants. Now you need to ensure a proper level of nutrients in the soil. The following information should be viewed as a set of general guidelines. Always follow the instructions on the amendment package, because concentrations vary. In general:

- **Low nitrogen level –** add fertilizer
- **High nitrogen level –** water frequently and discontinue fertilizing until nitrogen level returns to normal
- **Low phosphorus level –** add bone meal
- **High phosphorus level –** water frequently and switch to a low-phosphorus fertilizer until level returns to normal
- **Low potassium level –** add potash
- **High potassium level –** water and discontinue adding additional potash until level returns to normal