

Acidifying Your Soil

Soil pH

The measurement of soil is called the pH. The pH scale ranges from 0 to 14, with 7 as neutral. Most lawns, ornamental plants, and vegetables prefer a slightly acidic soil with the pH range between 6.5 and 6.8. Certain plants like hydrangeas, azaleas, rhododendrons, and blueberries prefer more acidic soils ranging from 5.0 to 5.5. Maintaining the proper pH is important because many of the essential nutrients plants require for growth are only available in a specific pH range.

Measuring Soil pH

For a successful garden, it is very helpful to have the pH of the soil tested every three to five years. A sample of your soil may be brought to the Arkansas Cooperative Extension Service for analysis. The results of this test will guide you in determining which soil amendments and fertilizers are required.

Lowering the pH (acidifying)

In many instances, the soil will require a lowering of the pH, especially for the successful growth of acid-loving plants, especially if the pH needs to be adjusted. There are a number of different materials you may use to increase the acidity of your soil. Elemental sulfur and ferrous (iron) sulfate are both effective in acidifying the soil. Iron sulfate reacts quicker than elemental sulfur, but you must use more to achieve the same change in pH. See the table below to help you determine the amounts of these to add to your bed.

Sulfur and iron sulfate needed to lower loamy soils to pH 5.5 for acid-loving plants

<u>Initial soil pH</u>	<u>Pounds of sulfur</u> /100 sq. ft.	<u>Pounds of Iron</u> sulfate /100 sq. ft.
7.5	5.0	11.5
7.0	3.5	9.0
6.5	1.5	3.5

Note: Clay soils will require more amendment, while sandy soils will require less.

For unplanted beds, elemental sulfur or ferrous sulfate should be spread evenly over the area. Till in depth of 6 to 12 inches. It is best to prepare the bed several weeks to month in advance to allow time for the pH to change. If a pH change greater than one unit is required, the pH should be checked every six months. Otherwise, check the pH one year after amending the soil to determine if the correct adjustment was made.

For beds with plants already established, only small amounts of these chemicals can be added at one time to prevent burning. For example, only one-half pound of elemental sulfur should be spread over 100 square feet and then worked into the surface soil. Great care must be taken when incorporating chemicals into the soil where plants are growing since many acid-loving plants have shallow root systems that could be easily damaged by tilling the surface soil. Apply these chemicals to the bed only when it is dry to prevent burns on the foliage. Wait four to six weeks before adding more, if needed.

Maintaining the Correct pH of Acidic Soils

Once the desired pH is achieved it must be monitored and maintained. Test the pH each year for acid-loving plants. An acidic soil may be maintained by several methods. Aluminum sulfate is often recommended for hydrangeas because the aluminum enhances the blue color of the flowers. One pound of this is approximately equal to 2 cups. It should be spread over the root zone of one plant every year in early spring and watered in well. Organic matter such as pine leaf compost, oak mulch, or peat moss may be spread 2 to 4 inches deep around the plants and hand-tilled in 6 to 12 inches. These amendments also help improve soil drainage. Take care not to damage roots when incorporating organic matter into the soil. Acid-forming fertilizers such as ammonium sulfate and ammonium nitrate may be applied to add nutrients to the soil and to help maintain a low pH. Follow label directions.

Raising the pH (liming)

In some cases, if your soil is too acidic, the soil test will recommend that the pH be raised. This may be accomplished through the application of limestone (agricultural or dolomitic), burned/quick lime or hydrated lime. The amounts to add will be dependent upon the soil pH, soil type (sand, loam, clay) and type of liming material.

In working to change the soil pH, great care must be taken not to change it too much. Plants are extremely sensitive to their soil environment, and can only tolerate a certain pH range. Maintaining proper soil pH is essential in growing a successful garden. Regular soil testing is recommended to monitor the soil pH. As always, follow label directions on packaged fertilizers.