



COOPERATIVE EXTENSION SERVICE
West Virginia University
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Design for Everyday Living

preparing soils for acid loving plants

by

Clifford W. Collier, Jr.
Extension Specialist, Landscape Architecture

Controlling soil reaction, also called the soil pH, is one of the most important operations a gardener can perform toward providing ideal soil conditions for plants. Most soils in West Virginia are acid in reaction, but in some instances it may be necessary to intensify the soil acidity in order to provide a more favorable pH for the growth of acid loving plants.

Acid soils occur naturally in humid areas where the leaching effect of rainwater saturates the soil with hydrogen. There may be indication in the natural vegetation, e.g. rhododendron, which require a very strongly acid soil (pH 4.5-5.0), flourish in wooded areas, where naturally acid soils are found. Also, most other native broadleaf evergreens are found growing under similar conditions. Acid soils may also occur around industrial areas where sulfur in coal smoke or other exhaust fumes is carried into the soil by rainwater.

Methods of Increasing Soil Acidity (Lowering the Soil's pH)

A reduction in the pH of soils is often desirable for the cultivation of plants such as rhododendron, azaleas, dogwoods and broadleaf evergreens. The lowering of the pH may be accomplished by applications of sulfur. The best source of sulfur is pure sulfur in a powdered form. (see Table I) When applying powdered sulfur, be sure that the soil is not wet. A mixture of sulfur and organic matter in wet soils produces hydrogen sulfide gas which is foul smelling and toxic to

plants. Under favorable conditions, powdered sulfur is more effective than other sulfur compounds. Powdered sulfur is also less expensive and easy to obtain.

Sulfate of aluminum also may be used to increase soil acidity. Again, be careful when applications are made. Small quantities of sulfate of aluminum are ineffective and large quantities may produce a toxic salt effect on the plant. (Table I shows the amount of powdered sulfur and sulfate of aluminum that may be applied safely. A soil test would be necessary to first determine the existing pH level.)

Ferrous sulfate (iron sulfate) is another material used for increasing soil acidity. It is also sometimes recommended for such plants as rhododendron and azaleas, which require large amounts of iron. This salt, by hydrolysis, develops sulfuric acid which lowers the pH and at the same time adds soluble and available iron to the soil.

Chelated iron is a relatively new material which may be applied to furnish iron to plants. Both ferrous sulfate and chelated iron are soluble in water and may be fed to the plant through the foliage.

Magnesium and calcium are often lacking or deficient in acid soils. Small quantities of dolomitic lime may be applied to furnish these elements. If commercial fertilizers have been used which contain these elements, or if soil from a properly prepared compost pile is used, dolomitic lime usually will not be necessary.