Healthy Soils and Fertilizer Use

Protecting Your Soil

Healthy soils are high-performing, productive soils; protect natural resources and sustain wildlife habitat; and reduce nutrient loading and sediment runoff.. Soils are made up of minerals and organic matter. Pore spaces in the soil hold air and water which are essential for the transport of nutrients to plants, and waste away from plants. Soils function differently depending on the amount of minerals, organics, air and water present.

The best way to improve the soil is to add compost or other organic matter throughout the entire planting area before planting. Thoroughly mixing these materials deep into the soil helps provide water, air and nutrients to plant roots.

Building Healthy Soils

1. Disturb soils less. Keep them covered as much as possible with diverse plantings.

2. Add plenty of compost or other organic matter throughout the entire planting area before planting. Good compost will be dark brown or black in color; have a sweet, earthy smell; have a fibrous texture; and will be void of weed sprouts.

3. Mulch your plantings, but keep mulch away from the crown of trees and shrubs.

4. Fertilize moderately. Too much fertilizer can produce excess growth that is easily damaged by pests, wind, frost and drought.

Fertilizers

Fertilize moderately. Fertilizers, whether organic or inorganic, provide one or more of the chemical elements necessary for plant growth and development. Since many inorganic fertilizers are concentrated and very soluble, it is easier to apply too much and damage your plants. On the other hand, if you apply too much fresh, non-composted manure, you can also damage your plants.

"Organic fertilizers" include manures, compost, bone meal, rock phosphate, and alfalfa meal. Most nutrients in natural fertilizers are in low concentrations and must be digested by bacteria and soil fungi before they can be used by plants. These nutrients are typically slowly released over time. Therefore more of the nutrients actually feed the plant, instead of washing into streams or groundwater.

"Inorganic fertilizers" include ammonium sulfate or ammonium phosphate and are often called commercial or synthetic fertilizers, because they go through some manufacturing process. These fertilizers usually contain only a few nutrients; generally nitrogen, phosphorus, potassium and some sulfur; and are in a concentrated form readily available to plants. However, they can be lost from the soil quickly, polluting water resources; a slow-release type may be more suitable.

"Slow-release fertilizers" such as sulfur-coated urea become available as outer coatings are dissolved by moisture and soil bacteria when plants are actively growing.

"Quick-release fertilizers" like urea and ammonium sulfate quickly dissolve in water. However, they can wash through the soil with rain or irrigation and become a source of pollution if not immediately used by plants. If you need only a certain element such as nitrogen and want it to be quickly available to your plants, this type may be an option. Ideally, fertilizing should be based on observed plant needs or soil tests.

Resources

The Natural Lawn & Garden: Growing Healthy Soils
http://www.seattle.gov/util/groups/public/@spu/@conservation/documents/webcontent/growinghe_200311261701557.pdf

Natural Resource Conservation Service, Soil Health.
http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/soils/health/

USDA- Natural Resource Conservation Service Soils Website
http://soils.usda.gov/

www.dcnr.state.pa.us

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