

It's Not Just Dirt

By Susan Camp

My first vegetable garden was planted in a dusty, gray strip of land next to our garage in Hampton. My dad helped me dig up a few inches of dirt and I planted carrot and radish seeds. I was so proud when the baby plants starting peeking through the soil. I think I harvested a few scraggly carrots, but I don't remember much more about it. I do remember the soil, kind of pale gray, powdery, without any life.

I see that same soil in certain areas of our property in Gloucester, but I also see large sections of light red clay and others of fine sand. Some garden beds have grown rich from years of planting and amendments. In other words, we don't have just one type of soil, and that is typical of the Coastal Plains division of Virginia. The soils in the Tidewater region were deposited as the sea level dropped millions of years ago leaving infertile, acid soil that varies from fine sand to thick, sticky clay. Both types of soil are problematic, and not just because of lack of nutrients. Sandy soil drains quickly, leaving a thick crust that can impede water flow to plant roots. Clayey soil drains slowly and plants become waterlogged.

The first recommendation when planning a new garden or lawn is to submit a soil sample to VA Tech for laboratory analysis. Soil sample containers and instructions for obtaining a sample are available from the Gloucester Extension Office and from Master Gardeners at the main library every Tuesday from 11:00 a.m. to 1:00 p.m. VA Cooperative Extension (VCE) recommends soil sampling every three years. Analysis results include pH (acidity or alkalinity of the soil), potassium, phosphate, and micronutrient levels, and recommendations for the amounts of fertilizer and lime necessary to improve the soil. Dolomitic limestone adds calcium and magnesium to increase the pH, while elemental sulfur decreases the pH, making the soil more acidic. See VCE Publication 426-313 "Soil Preparation" for information on amendments to change pH and improve soil quality and nutrition.

Healthy soil will produce vigorous fruit, vegetables, and flowers. VCE Publication CSES-132P "The Soil and Me: A Perspective on Soil Health" describes the four necessary components of healthy soil: water (25%), air (25%), mineral particles (45%), and organic material (5%), which consists of humus, organisms, and plant roots. Indicators of soil health include physical, chemical, and biological properties.

The property owner can improve soil health through several management practices, including reduced or no-till gardening or farming, which encourages earthworms and other organisms. Planting a fall cover crop, such as grain or rye grass helps to prevent erosion, soil compaction and weed development. Leguminous cover crops like vetch and clover work symbiotically with certain bacteria to fix nitrogen in the soil. Crop rotation prevents erosion and depletion of soil nutrients and breaks disease and pest cycles. Organic materials, in the form of compost, manures, and "green manure" from cover crops prove to be the most valuable soil amendments.

Organic matter provides nutrition for organisms in the soil, and continuous decomposition improves both moisture retention and drainage by the formation of compounds that help soil particles adhere to each other. VCE Publication 426-711 “Building Healthy Soil” includes further information on improving soil quality. Adding amendments and nutrients to the soil is not a one-time event, but a continuous process. Healthy soil should maintain a pH between 5.5 and 7.5 and have plenty of microorganisms and earthworms.

Even though our region is known for its relatively poor soil of great variation, you don’t have to grow your flowers and vegetables in sand, clay, or gray powder. Improving your garden soil takes time and physical labor (and money, too), but the rewards of nutritionally rich soil with the deep chocolate color and crumbly texture of those famous cookies used to make cheesecake crust make the effort worthwhile.

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