

# Area 5

## Digging Deeper into Soil

Soil is not just a nuisance that needs to be swept up, but it is also the source of life that people would die without. Kentucky's soil needs to be protected because it has many significant and major uses. In Kentucky, soil is used to grow corn, soybeans, tobacco, and hay, as well as, our famous Kentucky "Bluegrass." Kentucky soil has a high capability to retain water which makes for richer soil and better crops that yields higher amounts of food. Farming is a major industry in Kentucky and livestock and livestock products amount to about sixty-six percent of Kentucky's agricultural economy. None of that would be possible if not for Kentucky's soil. In addition, the horse-breeding business in central Kentucky is said to be linked to Kentucky's high limestone content below the soil. Kentucky horse farms bring millions of dollars to Kentucky's state economy.

Sadly, runoff from gutters, parking lots, subdivisions, and retail complexes, which drains into sewer systems, is damaging Kentucky's soil. Runoff increases both erosion and flooding. Runoff also decreases the likelihood that water will soak into the ground due to it being channeled directly into creeks and rivers. This can cause a shortage in groundwater. Groundwater is key to healthy soil. The water table lying just below the surface of the earth and in the limestone substrate stores water that will be slowly pulled up into the soil during dry months, thereby preserving a moist soil content that is less likely to become dried and susceptible to wind and rain erosion.

According to *Dictionary.com*, "Erosion is the process by which the surface of the earth is worn away by the action of water, glaciers, winds, waves, etc." Erosion causes soil detachment and wearing away of topsoil. Topsoil is the top fertile layer of soil. So, when the topsoil is worn

away it is harder for farmers to make their crops thrive. Humans cause erosion at a rate 10 to 15 times faster than any natural process, according to new research by Bruce Wilkinson, a sedimentary geologist. The main sources of erosion are agriculture, construction, and mining. It takes five hundred to a thousand years to form an inch of topsoil, which is why people have to take the harmful effects of erosion more seriously. With the growing population and demand for food people have to take care of soil or their will not be enough farmland. Another harmful factor to Kentucky is deforestation. Deforestation is the clearing of trees, transforming a forest into cleared land for the harvesting of trees. When soil is not held in place by trees and vegetation it becomes vulnerable to erosion and landslides.

Over-tilling is another devastating factor in soil reduction. Over-tilling is excessively plowing or harrowing land. Bonnie L. Grant, author of the *Gardening Know-How* blog, says, "Having knowledge of the right time for tilling and appropriate methods for soil amendment can prevent over-tilling." The results of over-tilling are clumping, loss of nutrients, and diminished germination. This can interrupt delicate cycles and releases rich humic carbon, which is valuable for soil fertility, as a gas. Also earthworms, who are beneficial organisms to the productiveness of soil, lose their homes.

Overgrazing occurs when plants are exposed to intensive grazing for extended periods of time, or without sufficient recovery periods. Overgrazing reduces the productivity and usefulness of land. Overgrazing can result in desertification and erosion due to the lack of vegetation. Soil affected by overgrazing is more liable to droughts, wind erosion, and strips the soil of most of its nutrients.

To understand how to protect Kentucky's soil, one must first know the components of Kentucky's soil. Kentucky's soil consists of forty-five percent minerals, twenty-five percent water, and five percent organic material or humus. The representative soil of Kentucky is called Crider soil. According to *Soil Daily Times*, "Crider soil is deep, well-drained and a moderately permeable type formed in a mantle of loess, a type of silt that forms fertile soils, in underlying limestone." It is one of Kentucky's most productive farming soils. Crider soils are extensive, making up about 500,000 acres in Kentucky and are in 35 counties in the state. Most areas of Crider soil are used for crops or as pasture land for livestock.

People can avoid the destruction of soil by reseeding after cutting down trees. Contour plowing, which is plowing following the outline or shape of the land, minimizes the effects of erosion and over-tilling. Also, not building as many parking lots and unneeded cement structures can limit runoff and flooding. Overgrazing can be prevented by controlling livestock and letting the land recover and restore its vegetation. These are just a few simple steps that people can take to make Kentucky and the world overall a happier, healthier place in which to live.

By Aidan Kane