

# MINNESOTA PROFILE

## Lester soil (official Minnesota state soil)

**Appearance.** Lester soil is one of more than 100,000 types cataloged in the United States. Soil scientists analyze and classify soils according to texture, color, chemistry, structure, and other properties. They dig in the upper six feet of soil to examine the layers that have built up over thousands of years. Together these layers, called horizons, form a soil profile. The top layer of Lester soil is dark brown, rich in decaying vegetation, and crumbly as cake. Next the subsoil becomes brown and then dark yellowish-brown clay loam. Beneath these layers is the parent material—broken bedrock ground up and moved by glaciers flowing from the northwest. Over time, the parent material weathers and becomes the base for the soil profile. Bedrock beneath Lester soil is hundreds of feet below the glacial till—gravel, sand, silt, clay, and rocks left by receding glaciers.

**Range.** Named for the city of Lester Prairie west of Minneapolis, Lester soils formed in the glacial till. Grasses from the prairie and leaves from the Big Woods added fresh organic matter, which decayed into dark brown humus. Today, Lester soils cover more than 400,000 acres in 16 counties in south-central Minnesota.

**Biota.** Topsoil is alive with plant and animal life. Gophers, snakes, spiders, beetles, and other burrowing creatures abound. Soil provides habitat for bacteria, fungi, molds, and other organisms. A handful of topsoil supports more than 6 billion microscopic creatures.

**Agricultural use.** Formed around 10,000 years ago, after the last glacial period ended, Lester soils are relatively young and fertile with an abundance of natural plant nutrients. Because they formed on glacial moraines, these sloping soils drain well and have good aeration. The mix of nutrients, water, air, and organic matter makes Lester soils well-suited for growing pasture grasses and crops such as corn and soybeans.

**Ecosystem functions.** Healthy soils absorb, hold, release, and purify water. They modify the atmosphere by absorbing dust, water vapor, carbon dioxide, and other gases. The processes that form soil are continuously recycling plant and animal nutrients. To maintain soil health, soil scientists recommend keeping soil covered year-round with a diverse mix of plants. When uncovered, soils erode by wind and water. Particles picked up by wind can travel a few miles or thousands. Scientists have determined that the potassium in Hawaiian soils came from dusts of the Gobi desert in central Asia.

**Status.** In spring 2012 the Minnesota Legislature designated Lester as the official state soil. To learn more about the soil that covers Earth, visit *Dig It! The Secrets of Soil*, an exhibit at the Bell Museum of Natural History in Minneapolis through July 28. See [www.bellmuseum.umn.edu](http://www.bellmuseum.umn.edu).

Kathleen Weflen, editor in chief

*All soils have layers, or horizons, based on how they formed and the underlying parent material. This cross section shows a typical profile of Lester soil. The topsoil is 6 inches deep. Clay leached out of the second layer and into the third and fourth layers, which are rich in clay. The fifth has high lime content. The bottom layer is glacial parent material.*

PROFILE PHOTOGRAPH COURTESY OF AL GLENCKE

