

Soil and Plant Science Division

Technical Soil Services

South Central Soil Survey Region

Tally Elementary Garden Club

Kerrville, Texas, Major Land Resource Area (MLRA) Soil Survey Office (SSO)

Purpose

The purpose of this educational activity was to use an outdoor environment to show the students of Tally Elementary's garden club, made up of first- through fifth-grade students, how different types of soil and environments help grow healthy plants. The Kerrville, Texas, MLRA SSO (fig. 1) staff used hands-on activities to demonstrate how soil cover, soil texture, and soil moisture impact plant life.

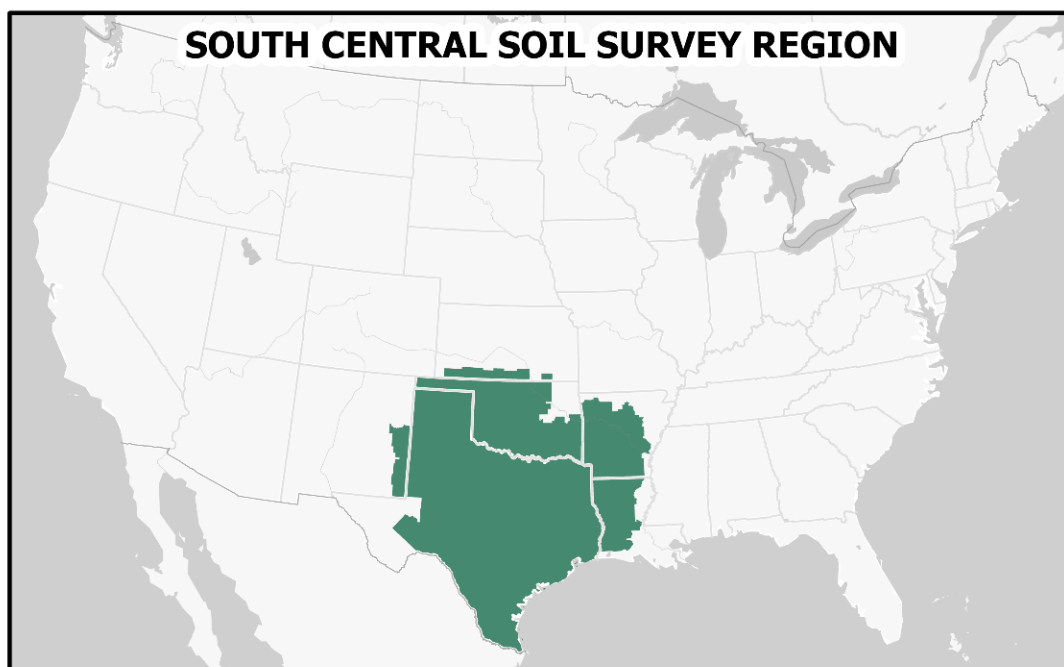


Figure 1.—The Kerrville, Texas, MLRA SSO is part of the South Central Soil Survey Region.

Background

Travis Waiser and Jarred Goedeke from the Kerrville MLRA SSO were asked to present a talk to Tally Elementary's garden club in Kerrville, Texas, on September 3, 2025. Waiser and Goedeke presented to a total of 26 students and 4 teachers. The first part of the presentation involved an interactive discussion about the importance of soil and water for growing healthy plants. Then Waiser and Goedeke led the students in hands-on activities to teach them about soil texture and how it influences available water capacity

Waiser and Goedeke provided three different soils to help students experience different soil textures: a sandy-textured soil, a loamy-textured soil, and a clayey-textured soil. Once the students could distinguish between the different textures, the presentation shifted to the importance of water in the soil to plants. Waiser and Goedeke put each of the three different soils in a funnel with filter paper and poured 25 mL of water over the soils. The students hypothesized which soil would hold more water and which soil would hold the least. The experiment revealed that clayey soils held the most water and sandy soils held the least.

Once the students understood what soil texture does to available water capacity, Waiser and Goedeke set up an experiment that demonstrated the importance of ground cover and vegetation and their effect on soil temperature and infiltration. This experiment involved three infiltration rings (fig. 2): one in garden mulch, one in a grassy area, and one in a bare ground area. Waiser and Goedeke placed a thermometer in each of the three sites to show the soil temperature. The water infiltration at the garden site had the quickest time for infiltration at 9 seconds and had the lowest temperature around 90 degrees F. The other two sites took several minutes for water to infiltrate. The bare ground site had a temperature above 110 degrees F and the grassy area was about 95 degrees F. Waiser explained the role that roots and ground cover play in increasing pore space and limiting compaction.

Waiser wrapped up the presentation by connecting the dots between what they just learned and explained how it all fit together. He explained that soil texture, vegetation cover, and roots all play vital roles in having healthy soil and healthy plants.

Key Outcomes

Many students do not get the opportunity to learn in an outdoor setting, so Waiser and Goedeke took the opportunity to teach the students about soils within a micro-ecosystem the students were familiar with. The students in the garden club learned the importance of soil texture, ground cover, roots, and keeping the temperature within a certain temperature range for optimal plant growth.



Figure 2.—Garden club students observing three different infiltration sites and determining soil temperature.