

## SOIL AND PLANT SCIENCE DIVISION

# Technical Soil Services

## South Central Soil Survey Region

### **Kerrville, Texas, Major Land Resource Area Soil Survey Office**

### **Hal Peterson Outdoor Education**

#### **Purpose**

The purpose of this outdoor educational activity was to expose the Kerrville sixth graders to learning in an outdoor environment.

#### **Background**

On Tuesday, October 1, and Thursday, October 3, Travis Waiser and Jarred Goedeke from the Kerrville, Texas, Major Land Resource Area (MLRA) Soil Survey Office traveled to the H.E. Butt Foundation Camp in Leakey, Texas, to present at the Hal Peterson Outdoor Education event. Over the course of 2 days and 16 presentations, Waiser and Goedeke presented to a total of 164 students and 40 parents. The presentations began with asking students to describe what an ecosystem is. Once students understood that an ecosystem is composed of linkages and interactions between both abiotic and biotic components, Waiser shifted gears to talk about precipitation and its influence on an ecosystem. He explained that when it rains livestock producers' main goal is for water to infiltrate into soil. This may be influenced by a variety of different site characteristics, most notably vegetation and soil.

Goedeke then made distinctions between different soil textures and how this influences infiltration. Goedeke compared sand to a beach ball, silt to a baseball, and clay to hole punches. This illustrated the similar shape sand and silt have and how clay is both flat and smaller than the former. From there, Goedeke explained how different soil textures will influence the way water moves into and through soil, causing some soils to have higher infiltration rates or greater water holding capacities.

To help convey how vegetation affects water infiltration, Waiser and Goedeke set up an experiment for students to conduct across three sites, all with different vegetation. One

site was placed under a juniper canopy, another was in a patch of King Ranch bluestem, and the last was on bare ground. At each site, a hollow cylinder was partially inserted into the soil, and students were asked to pour a cup of water into the cylinder and time how long it takes for all the water to infiltrate into the soil. The two vegetated sites took between 30 seconds to 5 minutes for water to infiltrate into the soil; however, the bare ground site took over 30 minutes for all the water to soak in. Waiser explained the major difference between the water infiltration rates has to do with the amount of vegetation on each site. He described the valuable role roots play towards increasing pore space and limiting compaction, both of which aid in water infiltration. Waiser highlighted why infiltration is important by making connections to groundwater recharge, runoff, pollution, and the many ways humans and wildlife depend on water infiltrating into the soil.

## Key Outcomes

Many students do not get the opportunity to learn in an outdoor setting, so Waiser and Goedeke took the opportunity to teach what happens in a rainfall event within a micro-ecosystem (fig. 1). They then connected the dots on how a raindrop that falls at the current location could end up being beneficial to people who live in cities such as San Antonio, Texas. The students also learned how management decisions will affect that raindrop and the role that plants and soils play as well. The South Central Soil Survey Region staff participates in many student events like this one sharing their knowledge of our ecosystem (fig. 2).



Figure 1.—Travis Waiser talking to the students about ecosystems (left photo). Students measuring infiltration rate under a juniper tree (right photo).

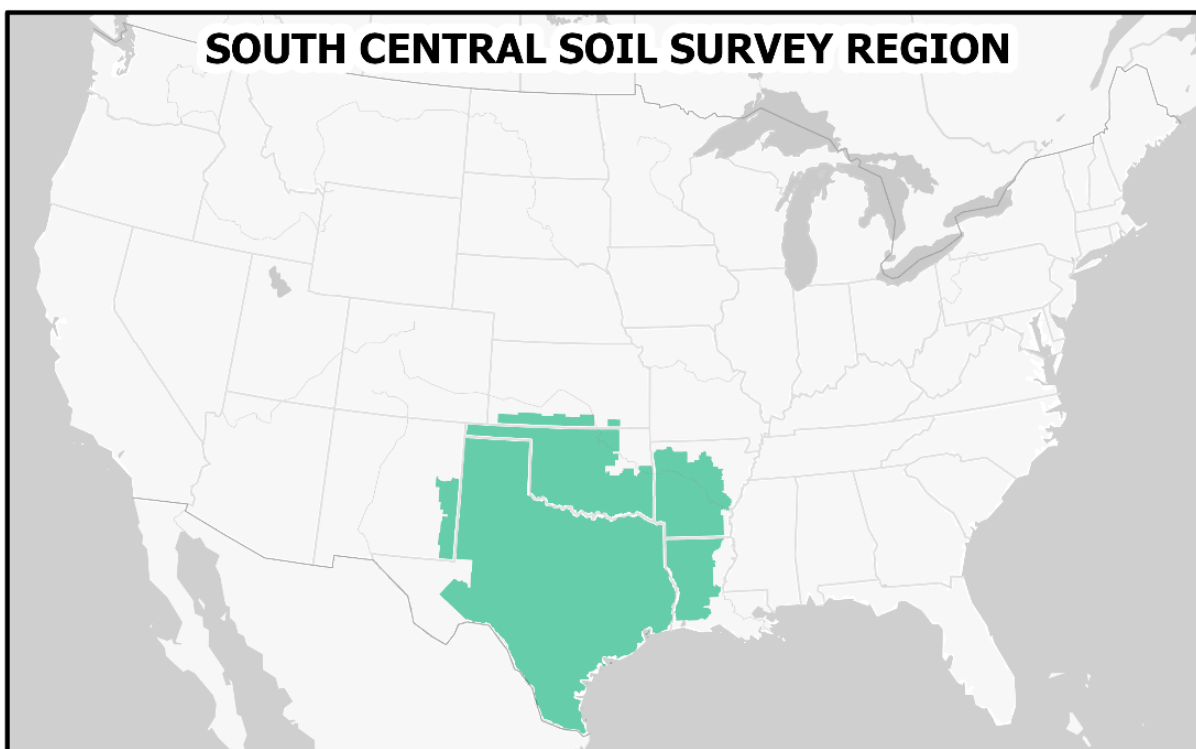


Figure 2.—The South Central Soil Survey Region covers most of Texas, Oklahoma, Arkansas, and Louisiana as well as small portions of Kansas and New Mexico.