



## SOIL HEALTH AS AFFECTED BY LAND MANAGEMENT

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Soil health analyses were performed on a potentially long-term grazing experiment located at the Timberlake Biological Field Station near Goldwaithe Texas. The treatments involved access to grazing by deer, deer and cattle, and exclusion from grazing. A control treatment involving no grazing from domestic cattle for approximately 40 years was also included. In both the grazing and control treatments, each treatment was replicated 3 times in a complete block design. Each plot was divided into 5 sub-replicates which were soil sampled from 0 to 15 cm and brought to the lab for analyses. Chemical and physical analyses took place at the Aggregate Stability lab and Texas A&M AgriLife Research lab in Stephenville Texas. Analyses included: aggregate stability, permanganate oxidizable carbon, glomalin,  $\beta$ -glucosidase, hot and cold water extractions for easily available organic matter, gas flux analyses of  $\text{CO}_2$ ,  $\text{CH}_4$ , and  $\text{NH}_4^+$ , and total carbon and nitrogen. These analyses were designed to identify the impacts of land use on ecological properties including soil health and soil nutrient availability. Over time, these analyses will be integrated with those of arthropod health and plant diversity, with the objective of identifying sustainable land management practices. Adding more chemical analyses is planned in the future to better understand the characteristics of the soil. It is important to understand the quality of the soil due to it being vital for plant and arthropod health. By addressing the composition of the soil, farmers and other agricultural managers will be able to improve the overall conditions of land management.

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