



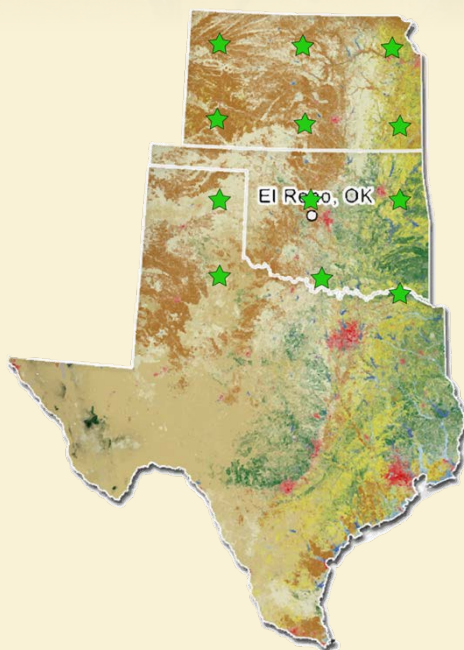
Soil Health in the Southern Plains

Farmers across the Southern Plains are expected to experience multiple impacts as a result of climate change, including more variable and extreme rain events, higher seasonal and annual temperatures, and more prolonged and intense droughts. One way of insulating agricultural production systems against these changes is to develop or preserve healthy soils. Healthy soils are less likely to erode, have a higher water-holding capacity, and dry more slowly, in large part because they are richer in organic matter. Some farmers across the Southern Plains employ practices with a specific emphasis on maintaining soil health. Many of these are designed to reduce the amount of soil disturbance and promote the return of organic matter, generally in the form of decomposing plant material, to the soil.

There is some evidence that soil health management practices help improve soil health, but the effects have not been measured using a standard method across the Southern Plains, and they have not been extensively compared to

sustainably managed traditional systems. Wide soil type variations, north-to-south temperature variation, and east-to-west precipitation variation across the region further complicate comparisons. A better understanding of soil health management effects at the regional scale is important to farmers and scientists who are working to adapt agricultural production systems to a changing climate. Through this project, we hope to determine how soil health management practices, such as no-till and the use of cover crops, affect a variety of soil health indicators across the southern plains region of the United States.

The Southern Plains Region



In the initial phase of the project, we identified twelve sites (see map) from northern Kansas to northern Texas, and during subsequent weeks coordinated with local farmers to collect samples from pairs of fields. This pairing of fields enabled us to compare soils that have experienced very similar environmental conditions, eliminating some of the complications associated with the use of large study areas. Each pair consisted of one soil health management field and one traditional management field, which we are in the process of analyzing for chemical, biological, and physical soil properties that are commonly used by farmers to determine overall soil health. Furthermore, at the request of participating farmers as well as to

deepen our scientific understanding of the soils in question, we will also be determining not only how many microbes are in the soil, but which types are present and in what proportions.

The U.S. Department of Agriculture Climate Hubs' mission includes "develop[ing] and deliver[ing] science-based, region-specific information and technologies... to agricultural and natural resource managers that enable climate-informed decision-making". Accordingly, the results of this project will be made available to the general public in formats suitable for both

scientific and non-scientific backgrounds via the Climate Hub website, as well as through various workshops and educational events with Climate

Hub partners. Participating farmers will also receive detailed results for their own fields, as well as a summary of the findings across the region and in their areas.



Collecting soil samples in a farmer's sorghum field.

If you are interested in being kept up-to-date about this project and

its findings, please contact Dr. Caitlin Rottler or Dr. David Brown by email (below).

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