USDA United States Department of Agriculture

Soil Science Division

Soil Survey Region 5

Pierre, South Dakota, Soil Survey Office

SCAN Weather Station Installed on Tribal Land in South Dakota

Purpose

The Bureau of Indian Affairs (BIA) and NRCS combined their technical and financial resources via an Interagency Reimbursable Agreement to purchase 25 Soil Climate Analysis Network (SCAN) weather stations. The stations were deployed to eligible Tribes and Nations to support agricultural operations and STEM (Science, Technology, Engineering, and Mathematics) education.

The Lower Brule Sioux Tribe in South Dakota received a station and hosted a training session for other Tribes to show how to install and use SCAN stations on their own Tribal lands. The stations collect data on soil moisture, soil temperature, air temperature, precipitation, wind speed and direction, incoming solar radiation, relative humidity, and leaf wetness. This information will help farm managers to make proper and timely management and operational decisions for their farms.

Dr. Brian Molyneaux, Lower Brule's archeologist, shares the tribal history of the area with the group while explaining the relationship between landforms, land uses, and different soils of the area.

Interested participants came from all over the United States. They included hydrologists, soil scientists and conservationists, NRCS Tribal liaisons, representatives from NOAA (National Oceanic and Atmospheric Administration) and South Dakota State University, Tribal members and leaders, an NRCS electronics technician, a retired hydrologist, and a summer intern. The participants came to observe or assist with the installation, to learn about how the station works and its different applications, and to network with the other participants. The crew from the NRCS National Water and Climate Center (NWCC) provided the technical expertise and training on installing the station and demonstrated the instruments to. This project would not be possible without their involvement and diligence.

The focus that week was on two principal activities: assembling the station and sampling the soils. Sampling the soil is a critical element as this provides accurate data on soil properties needed to properly calibrate the soil moisture sensors. The

Pierre MLRA Soil Survey Office took the lead in describing and sampling the soils. The samples will receive an array of tests and analyses at the Kellogg Soil Survey Laboratory in Lincoln, Nebraska.

This SCAN station will also serve as a focal point for education of Sioux Tribal youth using the STEM model. STEM is an interdisciplinary and applied learning approach to integrate its four disciplines into cohesive and real-world applications. The Lower Brule Schools Superintendent visited the site and learned about the SCAN station and the soil sampling. He enthusiastically discussed the possible applications of the station in their curricula and for student interns at the Lower Brule Research Group.

A cross arm supporting the anemometer and solar radiation sensor is installed.

Key Outcomes

Installing the SCAN station is the first step in providing critical data to an underserved community. It will help farmers to increase agricultural efficiency and improve decision-making during all aspects of the cropping cycle. It will also provide an excellent real-world STEM example for local students. In addition, new and productive relationships have formed between the participants and our people at the local, State, and national levels of the Agency “that helps people help the land.”

The archived and current data for the new Lower Brule SCAN station is available at the NRCS National Water and Climate Center’s SCAN webpage: https://www.wcc.nrcs.usda.gov/scan/.