



SAND RECEIVES North Dakota Rural Water Award

Anywhere in the world, a portion of the water that falls as rain and snow infiltrates into the subsurface soil and rock. How much infiltrates depends greatly on several factors. Baxter Sand, a student at Ashley High School, Ashley, N.D., has found this to be true in the winter, as well as in the summer, in North Dakota.

Baxter recently competed in the Southeast Central Regional Science Fair, which was held in Jamestown, N.D., on March 13. North Dakota Rural Water sponsored an award for the best drinking water-related project at the competition. Bailey Elkins and Julie Hein awarded this prize to Baxter, whose project is titled Winter Infiltration.

The purpose of his project was to determine if water will infiltrate on different soil types during the winter. He was curious as to whether land with proper grazing management would infiltrate more water than crop ground. He concluded that native rangeland soil types infiltrated water the fastest.

Infiltration is the process of water moving downward from the soil surface into the soil profile. "Infiltration rate" is simply how fast water enters the soil and is usually measured in inches or millimeters per hour. This rate depends on soil texture (amount of sand, silt and clay), moisture content and soil structure. Soils with well-developed structure and continuous pores to the surface allow water to readily enter the soil profile. Baxter found rangeland with snow cover had the best infiltration rate.

Soil is a reservoir that stores water for plant growth. The water in soil is replenished by infiltration, which can



Baxter Sand

be restricted as a result of improper management. Improper rangeland management impedes vertical water movement by reducing pore space and size and results in either downslope runoff or ponding on upland soils where it is lost to evaporation. When less water is stored in the soil for plant growth, plant production decreases, resulting in less organic matter additions to the soil. This weakens soil structure, further decreasing the infiltration rate.

Infiltration is also important to aquifers. If the water is not properly handled at the surface, the amount of water in aquifers diminishes. Natural refilling of deep aquifers is a slow process because groundwater moves slowly through the unsaturated zone and the aquifer. Baxter's science fair project shows infiltration is occurring during the winter months, as well as during the summer months. More snow cover over rangeland helps that process.



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