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## Science News

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### How Will North America's Largest Aquifer, The Ogallala Aquifer, Fare?

*ScienceDaily* (Apr. 10, 2008) — Are the tens of thousands of playa lakes that dot the Southern High Plains key to keeping the Ogallala Aquifer's dwindling waters clean? That's the question Agricultural Research Service (ARS) plant physiologist Dennis Gitz is asking about North America's largest aquifer.

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Playas are ephemeral lakes that form when rainwater fills natural clay depressions in the landscape. Gitz found that this water flows continually downward, if slowly, into the Ogallala, contributing to its recharge.

The recharge rate for cropland over the Ogallala is negligible, which is why there is so much concern for this practically finite source of water.

Part of the playas question is whether the recharge rate is significant enough for them to be protected with filtering borders of gamagrass or switchgrass. If so, the grass borders would ensure that playas continue to add significant amounts of clean water to the Ogallala and help extend its useful life.

To measure the recharge rate of the Ogallala for both cropland and playas, Gitz and colleagues from Texas Tech University are using soil thermometers to track rainwater's downward movement through soil. The thermometers track rainwater by detecting sudden changes in

temperature where rainwater stops seeping.

The scientists proved the thermometer idea works in a study that showed a good agreement between thermometer readings and actual water infiltration readings. Thermometers are much less expensive than other methods of tracking rainwater infiltration.

Gitz has installed a bank of instruments at 14 playas and is developing instruments for 16 more. These include instruments for weather stations, as well as for measuring water levels. He will use data from these instruments to calculate expected water evaporation rates for comparison to actual water losses. The difference shows the amount of water that has infiltrated the soil below the lakes.

If the recharge rate for playas turns out to be negligible, farmers could consider managing them for rangeland or recreational use.

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The Ogallala aquifer underlies parts of eight states. (Credit: Photo courtesy U.S. Geological Survey)

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