

Researchers -- replenish aquifers by flooding fields in winter

University of California-Davis researchers propose flooding some farm fields during rainy winter months to replenish groundwater supplies that have been depleted because of the drought.

Tim Hearnden, Capital Press Ag Weekly, 8-4-15

DAVIS — A pair of researchers suggests replenishing vastly depleted groundwater supplies by flooding farm fields when the rains return.

Scientists Anthony O’Geen and Helen Dahlke of the University of California’s Division of Agriculture and Natural Resources propose using some of the state’s 3.6 million acres of farms and ranches with suitable topography and soil conditions to recharge aquifers during winter months.

Already, many water agencies recharge groundwater by spreading water on open land and allowing it to percolate into aquifers, but dedicated sites for this type of recharge are scarce, UC experts say.

While Dahlke is still conducting field experiments to evaluate how much water can be recharged in a couple of weeks and whether all that water would hurt crops, the researchers believe they could find enough farmland to use without disrupting production.

“(I)f the infrastructure is present (a big if), there is plenty of suitable land and low-risk crops that could be used,” O’Geen told the Capital Press in an email.

“The scenario we considered is a managed flood water application,” he added. Water managers would apply the water as a grower would for flood irrigation and not allow catastrophic flooding of fields, he explained.

Are the scientists concerned about losing water to evaporation?

“No, evaporation would be low during these times of heavy runoff events,” O’Geen said. “And even if there was some, the alternative would be losing it to the ocean.”

O’Geen, a UC Cooperative Extension specialist, and Dahlke, an associate professor, have published a peer-reviewed article on their idea in the current issue of the journal *California Agriculture*. The two work in the Department of Land, Air and Water Resources.

The study follows warnings from the UC-Davis Center for Watershed Sciences that farmers hit hardest by the drought could see their wells run dry this year. More than 1,800 wells around the state had already gone dry by the beginning of summer, according to Craig McNamara, chairman of the state Board of Food and Agriculture.

Many growers have responded by digging deeper wells.

In dry years, groundwater can account for more than half the irrigation water used in California, UC researchers say, but few groundwater basins are actively recharged.

A rainy winter would replenish some groundwater supplies anyway, but the researchers’ goal was to find soils best suited for deep percolation and are thus capable of accommodating large volumes of water rapidly, O’Geen said.

“When soil and underlying sediment have been depleted of water due to multiple years of drought, it could take several wet years to fill up the pores before rapid deep percolation can occur,” he said.

Soils retain water like a sponge and typically only send water deeper when they’re saturated, O’Geen said.

“Thus you need enough rain to fill all the pores in soil and in the hundreds of feet of sediment to see measurable response to groundwater levels,” he said. “That amount of rain is not likely in most areas of California.”