the watershed project

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Save Our Water

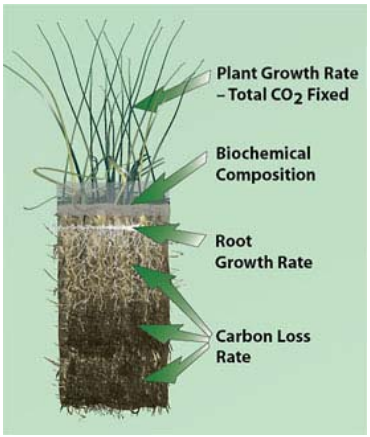
Are Wetlands the Solution to Climate Change?

Local Scientists Are Trying to Find Out

By Joanna Hoffman

As the need for action to address climate change grows, scientists are looking to nature for help. Wetlands construction is a creative solution to rising temperatures. Because wetlands fix atmospheric carbon dioxide (CO_2) into soil biomass, they can take selected levels permanently out of the atmosphere. In addition, their greenhouse gas mitigation potential far exceeds that of other ecosystems currently used for carbon sequestration. While forests sequester roughly six metric tons of CO_2 per acre, wetlands have the ability to sequester as much as twenty-five metric tons per acre. With numbers like these, talk of farming wetlands to mitigate greenhouse gases has been growing increasingly loud, and The Watershed Project has been listening.

Back in November, The Watershed Project co-hosted a talk by two West Coast scientists who have been studying the value of wetlands since the early 1990s. Stuart Siegel, President and Principal Environmental Scientist of Wetlands and Water Resources, and Brian Bergamaschi, Research Chemist for the US Geological Survey (USGS), began researching wetland farming in the Sacramento-San Joaquin Delta in conjunction with USGS scientist Roger Fujii and a team of local scientists. Their research was funded by the California Department of Water Resources, The University of California-Davis, and the USGS.



The Delta is a major water source for California. A natural estuary and wetland, the 740,000 acres that make up the Delta have been largely transformed into a series of channels and levees designed to pump water to northern and southern urban and agricultural areas of the state. Twenty-two percent of the Delta's annual water supply is funneled to Southern California, while sixty-nine percent is apportioned to agriculture in the San Joaquin and Tulare basins. Remaining amounts are sent to urban centers such as the Bay Area.

Decades of poor water and agricultural management have degraded the region's unique peat soils, emitted considerable amounts of CO_2 into the atmosphere, and led to alarming rates of land subsidence. Much of the region now stands at fifteen to twenty feet below sea level. Many of the Delta's farmed areas sit twenty feet or more below surrounding waterways and are channeled by levees, 1,100 miles of which are currently threatened by subsidence. Since the levee system protects both farmland and fresh water sources for millions of Californians, its failure would throw California into a water crisis.

Enter Siegel, Bergamaschi and the rest of their team's vision of wetland farming. Their Carbon Capture Farming plan involves shifting sections of the Delta's farmland from water-dependent and low-value crops, like corn and alfalfa, to wetlands. Doing so, they claim, would rebuild the Delta's unique peat soils, sequester CO_2, lessen pressure on the Delta's levee system, and bring new economic potential to the region. Wetland growth would provide farmers with a product that addresses climate change without depriving agricultural communities of viable income sources. And with the carbon market growing at impressive rates, the amount of sequestered carbon from each wetland farm could raise substantial profits.

Just as importantly, wetlands counteract the effects of land subsidence. Tules and cattails, the primarily components of these farmed wetlands, take CO_2 out of the air and fix it into soil biomass. As they die and decompose, they create new peat soil that increases land surface over time. These increases in land elevation would take substantial pressure off the region's levees.

Unfortunately, the wetland research team can't continue to explore the feasibility of "carbon farming" in the Delta because their funding has dried up. While the USGS and California's Department of Water Resources intended to expand their pilot project into a larger and more comprehensive effort, the current economic situation has pulled the plug on these plans. Such shifts are a shame. If human society is to act effectively against the effects of global warming, investing in projects like wetland farming is a large step in the right direction. Wetland farming is not the only possible solution to our ecological problems but it is one worth further investigation.

The Watershed Project is a 501(c)3 nonprofit organization. We rely on your support. Donate Now!