Turn Drain Water into a Farming and Wildlife Asset

Farming groups, scientists, and water contractors have joined forces to test an integrated bio-engineering system that innovatively addresses the problem of salt accumulation in San Joaquin Valley soils. "The 'Agroforestry for Sustainable Agriculture' program involves a salt-mining process that essentially converts a liability into an asset" says Vashek Cervinka, a Research Manager for the Department of Food and Agriculture. "Salt-laden drainage water is used to grow salt-tolerant trees and crops that can be sold as firewood, industrial materials, livestock feed—and serve as valuable wildlife habitat."

The principle driving these projects is simple: Use drainage water from salt-sensitive crops, such as tomatoes, to irrigate more salt-tolerant crops, such as cotton. Then use the drainage water from salt-tolerant crops to irrigate salt-tolerant trees, such as eucalyptus, tamarisk, or casurina. Capture the irrigation water from the trees and use it to grow salt-tolerant grasses (called halophytes), such as iodine bush, saltgrass, and cordgrass—a process that further concentrates the salts. And finally, discharge this salt-laden water into a small solar evaporator to crystallize and reclaim the salts.

This novel program began in 1985 and there are now about 50 agroforestry projects in the San Joaquin Valley. More than 600,000 trees have been planted. "Wildlife biologists consider the trees an incredible biological magnet," says Cervinka. "In one new stand, the trees were barely three feet tall and were already being used by a variety of song birds and ground-nesting birds. In some areas, these planted stands are the only trees for miles. They were quickly discovered by birds of prey, which use them for perching and roosting areas." A recently-initiated Fish and Game study is assessing the project's value and safety for wildlife.

To be effective the crops, trees, halophytes, and solar evaporator must be planned to work as an integrated system. A 250 acre farm, for example, would require about five acres of salt-tolerant trees, two acres of halophytes, and a one-acre solar evaporator.

San Joaquin Valley farmers involved with the test projects seem to be impressed with the program's potential. "They are using drainage water as a resource with economic value," says Cervinka. "They are creating a sustainable environment for farming—and for wildlife."

VASHEK CERVINKA, DFA

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Salt-laden drainage water is processed by using it to grow salt-tolerant trees, crops, and grasses that also provide habitat for wildlife. (Inset) Eucalyptus and other trees serve as roosts for American kestrels and other birds of prey.