



Effort succeeds using drain water to grow forage

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By Kate Campbell

Innovative farm management practices, an integrated water resources plan and new kinds of crops have transformed a farming region in the western San Joaquin Valley once plagued by mineral-heavy drain water flowing into Kesterson Reservoir.

Now, instead of drain water flowing into sloughs and wetlands, it's being used to grow a variety of high-value, salt-tolerant crops, including Jose tall wheatgrass—a forage crop popular with dairy farmers—and pistachios.

In the early 1980s, farmland tile water contributed to high concentrations of selenium in the 370,000-acre Grasslands watershed—a system of farms and wetlands along the west side of the San Joaquin River. Carrying selenium, boron and salts, the water posed a serious threat to farming and to wildlife. To protect water quality, the environment and wildlife, federal and state agencies prohibited discharging tile drain water to sloughs and the river from 40,000 farm acres served by Westside water districts.

During the past 25 years, however, the situation has dramatically changed for the better.

"This success is not a simple story," said Dennis Falaschi, who manages the Panoche Water and Drainage District, based in Firebaugh. "Today, the project consolidates subsurface drainage flows on a regional basis and uses a portion of the federal San Luis Drain to convey the flows around habitat areas."

The transformation began in 1988, he said, when 97,000 acres were included in the Grasslands Bypass Project. Drain water from the Grasslands watershed is collected and put to new use that brings the amount of water discharged near zero.

"We've cleaned up 90-some miles of channels that can deliver fresh water to the refuges and the grassland," he said.

After the San Luis Drain was closed, the bypass project approached federal and state wildlife agencies to reopen it in order to accomplish the project's goals. The districts won temporary use of the drain in 1988, which came with strict operating conditions, including reduction of selenium loads. Given the progress demonstrated by the bypass approach, the parties signed an agreement in 1995 that has since been extended. The use agreement states that the San Luis Drain, which is now a concrete-lined bypass that avoids the river and its tributaries, will be closed if annual load targets are exceeded by more than 20 percent.

"Since 1984 when I came here, I've never seen anything that has been contaminated by selenium," Falaschi said. "We have target mineral levels we have to meet in order to use the San Luis Drain."

When the problem was identified in 1985 at Kesterson Reservoir, more than 57,000 acre-feet of drainage water was discharged through Grassland channels. Today, that number has dropped to 14,500 acre-feet, representing a 75 percent reduction, and mineral levels have been well below minimum requirements.

Selenium levels in discharged water have been reduced by 87 percent, salt reduced 72 percent and boron down 64 percent, Falaschi said.

"We believe the selenium in the water we're draining occurs naturally and is born in the Panoche fan and seeps into our groundwater," he said. "There's nothing we (farmers) do that puts selenium into the water. However, retaining the water concentrates the minerals, which is a problem."

Continuous testing shows selenium concentrations remain at very low levels, well below those required to meet water quality goals. The cleanup has progressed to a point that in 2009, the State Water Resources Control Board removed selenium from the list of elements impairing the Merced River, which flows to the San Joaquin.

One of the ways drain water and mineral loads have been reduced, Falaschi said, is through the planting of salt-tolerant crops and use of drain water for irrigation.

"We started out testing 80 acres of Bermuda grass and put our problematic water on it," he said. "We saw the grass was thriving, but there's not a lot of value in Bermuda grass. So we started looking around and found there was more value in Jose tall wheatgrass, which is grown in the Midwest."

A native plant of Asia Minor, tall wheatgrass is highly salt-tolerant and is used for hay and pasture in the northern Great Plains and intermountain region. It produces high yields of good-quality forage, though it does not have the same nutritional value as alfalfa.

In the San Joaquin Valley, the Panoche Drainage District grows the crop on about 9,000 acres and sells all the baled forage it can grow. Falaschi said the district expects to produce more than 20,000 tons of Jose tall wheatgrass this year from at least three cuttings.

What started out as an environmental concern and an unreliable agricultural water supply has turned into a thriving farming operation that generates revenue for the drainage and irrigation districts and has nearly eliminated mineral-heavy water from entering the San Joaquin River and the delta.

The efforts of Panoche Drainage District are part of a regional Westside Integrated Water Resources Plan that includes coordination of drain water supplies, partnerships to avoid conflicts with farms and wetlands, saline management of groundwater supplies and practices that address selenium, salt, boron and dissolved oxygen in the water.

"One of the questions we asked ourselves was, 'How can we turn problematic water into a resource?'" Falaschi said. "Through a lot of cooperation and some government funding, we've found a way to solve problems and thrive."

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