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MIXQUIAHUALA JOURNAL

## Fears That a Lush Land May Lose a Foul Fertilizer



Janet Jarman for The New York Times

The foul cascade, which the farmers call “the black waters,” flows through a latticework of canals and then trickles over the fields.

By [ELISABETH MALKIN](#)  
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**MIXQUIAHUALA, Mexico —** Night and day, Marcelo Mera Bárcenas slops the fetid water that has coursed 60 miles downhill from the sewers of Mexico City and spreads it over the corn and alfalfa fields of this once arid land.

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The New York Times

Mexico City's sewage irrigates Hidalgo State's farmland.

From the roads here in the Mezquital Valley, fields stretch to the hills in a panoply of green, graced by willow trees. But up close, where Mr. Mera is paid for every acre of field he irrigates, the smell and look of the water that feeds this lushness chokes the senses.

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With only rubber boots for protection, he does not buy into the general belief here that the water does no harm, that a scrub with detergent each night will cure whatever ill it brings. Itchy boils break out on his hands, he said. He is often sick with colds and the flu.

“Of course it affects us because the water is so dirty,” said Mr. Mera, a laborer who has worked in the muck of these fields for 38 years, since he was 15. “But there’s nothing else to do.”

For 100 years, Mexico City has flushed its wastewater north to irrigate the farmland of Hidalgo State. This foul cascade, which the farmers call “the black waters,” flows through a latticework of canals and then trickles over the fields.

So when word got out that the government was finally going to build a giant wastewater treatment plant, one might have expected the farmers around here to be excited. Instead, they were suspicious.

“Without that water, there is no life, “ said Gregorio Cruz Alamilla, 60, who has worked his family’s 12-acre farm since he was a boy.

Mr. Cruz knows the water is loaded with toxic substances, including chemicals dumped by factories, and he tires of clearing his field of plastic bottles and wrappings every time he irrigates.



But like many others here, he worries that treating the water, though it may remove harmful contaminants, will also strip away some of the natural fertilizers that even the authorities here say have helped make this valley so productive. And despite the government's assurances, the farmers here suspect the worst: that once the water is treated, it will be pumped back to Mexico City, leaving the farms dry.

"If they take away the black waters we will die of hunger," Mr. Cruz said. "We don't know how to do anything else."

Farmers irrigate crops with wastewater across the developing world, but nowhere else on the scale of Mezquital Valley, researchers say. The 350 square miles of the valley's irrigated fields lie at the end of a crisscross of tunnels, rivers, lakes, dams and reservoirs that date from the 14th century, when the Aztecs settled on an island amid lakes and engineered the first network of dykes and dams to control the floodwaters.

Mexico City has never managed to keep those waters at bay. When they break loose, as they do most every year during the rainy season, the wastewater gushes into the streets and swamps the patios of working-class neighborhoods in the city's low-lying eastern suburbs.

It has been almost 40 years since Mexico City has built a new tunnel to drain the city's wastewater, and it now needs constant maintenance. Since then, the population of the metropolitan area has doubled to almost 20 million people.

"It was a predictable problem, but we never paid enough attention to it," said Ernesto E. Espino de la O, who manages the treatment and water supply project for the National Water Commission. A collapse of the crumbling system, warned one study from [Mexico's](#) National Autonomous University of Mexico, would be catastrophic, flooding large parts of the city.

To stop the flooding, the federal government is building a 38.5-mile tunnel to drain all the wastewater north at a rate of 40,000 gallons a second. "In July, August and September, we need the whole system to work well," said Rafael Carmona Paredes, who is in charge of the tunnel project for the commission, known as Conagua.

Engineers have begun to drill a series of giant shafts going down as far as almost 500 feet.

Below, enormous circular boring machines cut through the rock and lay down the tunnel's concrete casing. At the tunnel's end, near the town of Atotonilco, is the site of the planned water treatment plant, now just a sloping hillside and a sign with a promise.

"It is a disgrace that Mexico City doesn't treat its wastewater," said José Ramón Ardavín, the deputy director of Conagua.

The plant, which is budgeted to cost \$1 billion and will begin operating in 2012, will clean 60 percent of the city's wastewater. The water commission's measurements show that the water is laced with heavy metals like lead and arsenic, filled with high levels of pathogens and parasites, and weighed down by grease.

But the farmers "are worried that the treatment plant will take out the nutrients, that the water will go back to Mexico City and that it will be privatized," said Filemón Rodríguez Castillo, the director of the main irrigation district here. "The water is very much appreciated here, independent of the fact that it smells so ugly, that it stinks."

One of his jobs is to persuade local residents that even though the residents of Mexico City will have to pay to have their water treated, they will not get it back.

The main benefit of irrigating with clean water, he has told them, is that they will be able to grow many kinds of vegetables, which are now restricted to protect consumers from illness.

Officials here now direct farmers not to grow crops in which the edible part comes into contact with the irrigation water and is eaten raw, ruling out vegetables like lettuce, carrots or beets. Alfalfa is permitted because it is used as animal feed. But enforcement is spotty and the farmers abide by an elastic interpretation of the regulations, planting broccoli and cauliflower, for example.

To the farmers here, whose sturdy opinions match their surprisingly good health, the proof that their water is good is in what they see around them. "Plants won't absorb poison; they would die," said Jesús Aldana Ángeles, a 75-year-old fifth-generation farmer, who was watching his small flock of sheep munch on the remains of his harvested alfalfa field.

"There is no better laboratory than the ground. The earth absorbs everything. It purifies it, it treats it."

As the sun set, he brought the sheep in, crossing a footpath over an irrigation ditch that curls around his house like a black moat. "Bad water would never make anything green," he said. "But here the black waters turn everything green."

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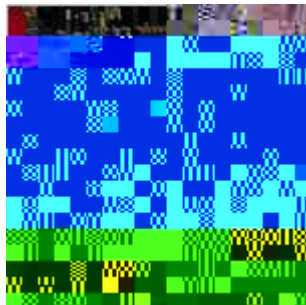
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