

Drought Hits the Southwest, and New Mexico's Canals Run Dry

Acequias, the fabled irrigation ditches that are a cornerstone of New Mexican culture, have endured centuries of challenges. Can they survive the Southwest's megadrought?

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LEDOUX, N.M. — Nestled in the Sangre de Cristo Mountains, the remote village of Ledoux has for more than a century relied on a network of irrigation ditches to water its crops. The outpost's acequias, as New Mexico's fabled canals are known, are replenished annually by snowmelt and rains. But with the Southwest locked in an unrelenting drought, they have begun to run dry.

"I never thought I'd witness such a crash in our water sources," said Harold Trujillo, 71, a farmer in Ledoux who has seen his production of hay collapse to about 300 bales a year from 6,000. "I look at the mountains around us and ask: 'Where's the snow? Where are the rains?'"

Acequias — pronounced ah-SEH-kee-ahs — borrow their name from the Arabic term for water conduit, al-sāqiya. They are celebrated in song, books and verse, and they have endured in the state for centuries. Spanish colonists in New Mexico began digging the canals in the 1600s, building on water harvesting techniques honed by the Pueblo Indians.

Even then, the acequia reflected the blending of cultural traditions. Muslims introduced acequias in Spain after invading the Iberian Peninsula in the eighth century, using gravity to manage irrigation flows. Acequias eventually spread around the Spanish-speaking world.

Making subsistence farming feasible in arid lands, New Mexico's communally managed acequias persisted through uprisings, epidemics and wars of territorial conquest, preserving a form of small-scale democratic governance that took root before the United States existed as a country.

But in a sign of how climate change has begun to upend farming traditions across the Southwest, the megadrought afflicting New Mexico and neighboring states may amount to the acequias' biggest challenge yet.

The difficulties confronting farmers in Ledoux — pronounced locally as Leh-DOOKS — exemplify those also facing hundreds of acequias around New Mexico, and a smaller number in southern Colorado and Texas.

Climate researchers say that the water shortages vexing the acequias are not surprising after years of warming temperatures, and that the depleted reservoirs and the spread of colossal wildfires around the West are a clear indication of the crisis.

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Making matters worse, the monsoon rains that once regularly soaked northern New Mexico failed to materialize last summer. And the snowpack over the winter disappointed once again. Parts of New Mexico, including the area around Ledoux, have received some rain in recent weeks, with more in the forecast this week, but the precipitation has done little to improve abnormally dry conditions.

More than 77 percent of New Mexico is in severe drought, limiting pasture yields and stunting irrigated crops, according to the National Drought Mitigation Center.

Thomas Swetnam, a scientist who studies tree rings to interpret changes in climate, said the drought this century in the Southwest had been so severe and prolonged that its few rivals in the last millennium include a multidecade stretch of an extraordinary drought in the late 16th century.

"This is probably the second-worst drought in 1,200 years," said Mr. Swetnam, a professor emeritus of dendrochronology at the University of Arizona who now lives in New Mexico, where he operates the Jemez Mountains Tree-Ring Lab.

Some acequias, notably those along the Rio Grande, are still delivering water to farmers in a show of resilience. But many acequias with other water sources, like lakes or small tributaries, are taking a direct hit.

In the 1980s and '90s, the mountain lake that villagers have relied upon since the 19th century to sustain the town's acequias was filled with relatively plentiful snowfall and rainfall. But two decades ago, exceptionally arid weather became the norm, drying up some of Ledoux's ditches.

"There's no better way of raising tension in a village than to have its acequias go dry," said Mr. Trujillo, the farmer. He said that bickering over acequia flows had intensified as farmers vied for increasingly scarce irrigation water.

The drought, Mr. Trujillo said, had also escalated a decades-long exodus from Ledoux to larger towns and cities. Ruins of adobe homes are scattered around the village's old Catholic church, giving parts of Ledoux the feel of a ghost town.

Paula Garcia, who was raised on a ranch in northern New Mexico, said she had seen the drying trend grow worse over her lifetime. Mora, the town where she lives, was once a thriving farming outpost. Now, she said, "the Mora River is chronically dry." That means there is sometimes enough precipitation for one of the acequias around her home to flow with water; the other two are drying out.

"It's the same in one community after another," said Ms. Garcia, 49, executive director of the New Mexico Acequia Association, a nonprofit group aiming to protect the 700 or so acequias in the state.

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Ms. Garcia says she regularly receives calls from farmers alarmed about acequias running low or even completely dry. Sometimes it is the mayordomo, or ditch boss, who calls. Other times it is one of the parciantes, the individual irrigators.

In the village of Hernandez, Ms. Garcia said farmers were dealing with critical water shortages on the Rio Chama, a tributary of the Rio Grande. Farmers in the communities of Cañon, Jemez Springs, Nambé and Santa Cruz, all in northern New Mexico, face similar conditions.

The Acequia de los Indios, near Pojoaque, went completely dry this year after the spring from which it drew ran out of water. Ms. Garcia said farmers relying on it were trying to find out why the aquifer for a spring that had for decades delivered water suddenly was not being recharged.

Traditionally, the acequia growing season in much of New Mexico had been from April to October. But in the parts of the state where farmers are grappling with water shortages, the season is now running only about half that span.

The shift has stressed not only the sources of locally grown organic food — many acequia farmers sell their produce at local growers' markets — but also a way of life that has begun to feel at risk of fading into the past.

For centuries, acequias have functioned under a system of governance in which farmers share in the cleaning and upkeep of each ditch. They also pay dues and elect a mayordomo, who has the authority to determine how much water is available on any given day and which farmer, or farm, gets it. The system is not without its flaws, as some former mayordomos who faced quarrels with angry neighbors can attest. But it has allowed the acequias to meet one challenge after another.

Ralph Vigil, a farmer in Pecos, a town of 1,400, said the drought had exacerbated problems the farmers were already dealing with, from arguments over water allotments to apathy.

“Growing food looks sexy in magazines, but it’s a really hard way to make a living out here,” said Mr. Vigil, 42, whose crops include spinach, kale and maíz de concho — a type of corn used to make chicos, an adobe oven-roasted staple of New Mexican cuisine.

As concerns began to mount over water supplies, Mr. Vigil said he converted much of his farm to one that would rely on drip irrigation, a method that uses less water than the traditional flood irrigation drawn from acequias.

Mr. Vigil says he still tries to hew to the old ways, emphasizing that the land he farms was opened for agriculture by his fourth great-grandfather, Donaciano Vigil, a territorial governor of New Mexico.

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But Mr. Vigil said he had seen how others in Pecos had given up farming altogether, opting to commute to jobs in Santa Fe. In a blow to Pecos's acequias, some have sold their water rights to developers elsewhere in the state.

Still, Mr. Vigil said he did not view the acequias as a potential victim of climate change. Instead, he sees them as part of the solution.

While he is well aware of the squeeze on water sources around New Mexico, Mr. Vigil holds out hope that the Pecos River, which nourishes his acequias, will get enough snowmelt and monsoon rains to keep flowing.

He pointed to studies showing that acequias can deliver benefits during times of drought well beyond those of elaborate irrigation systems fashioned out of metal pipes or steel culverts.

The earthen canals of the acequias, for instance, can hold water for long periods of time. Their seepage helps recharge small aquifers while also hydrating habitats for birds, wild animals and, of course, people.

"We've been low-carbon for centuries," Mr. Vigil said. "But for us to survive, we still need the rains."