

# Farmers restore native grasslands as groundwater disappears

September 9 2021, by Tammy Webber

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Tim Black's cell phone dings, signaling the time to reverse sprinklers spitting water across a pie-shaped section of grass that will provide pasture for his cattle.

It's important not to waste a drop. His family's future depends on it.

For decades, the Texas Panhandle was green with cotton, corn and wheat. Wells drew a thousand gallons (3,785 liters) a minute from the seemingly bottomless Ogallala aquifer, allowing farmers to thrive despite frequent dry spells and summer heat.

But now farmers face a difficult reckoning. Groundwater that sustained livelihoods for generations is disappearing, which has created another problem across the southern plains: When there isn't enough rain or groundwater to germinate crops, soil can blow away—just as it did during the Dust Bowl of the 1930s.

"We wasted the hell out of the water," says Black, recalling how farmers irrigated when he was a kid—as if it would last forever. Water flooded furrows or sprayed in high arcs before farmers adopted more efficient center-pivot systems that gave the Southwest its polka-dot landscape.

His grandfather could reach water with a post-hole digger. Now, Black is lucky to draw 50 gallons (189 liters) a minute from high-pressure wells, some almost 400 feet (122 meters) deep. He buys bottled water for his family because the well water is salty.

## ENDANGERED AQUIFERS

The problem isn't unique to the Ogallala. Aquifers from California's Central Valley farm country to India and China are being depleted. But the 174,000-square-mile (450,658-square-kilometer) Ogallala—one of the world's largest—is vital to farmers and ranchers in parts of eight plains states from South Dakota southward.

The region produces almost one-third of U.S. commodity crops and livestock protein, which affects other agricultural industries, small businesses, land values and community tax bases, says Amy Kremen, project manager at the U.S. Department of Agriculture-funded Ogallala Water Coordinated Agriculture Project that supports water management.

But because water doesn't recharge easily in most areas, if it runs out, it could be gone for hundreds if not thousands of years.

Though groundwater in Texas can recharge to a degree, by percolating through playa lakes, many have been plowed over and no longer function.

And in Texas, along with parts of New Mexico and Oklahoma, water is disappearing more rapidly than elsewhere in the aquifer, also called the High Plains. Less-frequent rain linked to climate change means groundwater often is the only option for farmers, forcing tough choices.

Some are growing crops that require less water or investing in more efficient irrigation systems. Others, like Black, also are replacing cash crops with livestock and pastureland.

And more are returning land to its literal roots—by planting native grasses that green with the slightest rain and grow dense roots that hold soil in place.

"There's a reason Mother Nature selected those plants to be in those areas," says Nick Bamert, whose father started a Muleshoe-based seed company specializing in native grasses 70 years ago. "The natives ... will persist because they've seen the coldest winters and the hottest dry summers."

Black, who once grew mostly corn, plants such grass on corners of his fields, as pasture for his growing herd of cattle and as a cover crop between rows of wheat and annual grass.

The transition to cattle, he hopes, will allow his oldest son, Tyler, to stay on the land Black's grandparents began plowing 100 years ago. His younger son, Trent, "could see the writing on the wall" and is a data analyst near Dallas.

"You want your kids to come back, but damn, there's better ways to make a living than what we're doing," says Black, maneuvering his pickup through a pasture. "It's just too hard here with no water."

## LOSING FARMLAND

Dry grass crackles underfoot as Jude Smith reaches an overlook at Muleshoe National Wildlife Refuge, established during the Great Depression and Dust Bowl to preserve native prairie and three spring-fed lakes.

It's mid-May and everything looks dead because there's been almost no rain for a year. The lakes—where the Ogallala should bubble up and tens of thousands of migrating Sandhill cranes gather in good years—are dry, too, save for muddy streaks darkening the lakebed. The water disappeared as nearby farmers struggled to pump enough groundwater to grow cotton.

Rain might not raise the water table much, says Smith, a biologist who manages the refuge. But the native prairie comes alive with even a trickle.

While nonnative grass dies during droughts, native grass goes dormant and the roots—up to 15 feet (5 meters) deep—hold soil.

Rain came this summer—about 16 inches (41 centimeters) so far—often in torrents. The refuge's lakes refilled from runoff and springs started running again, Smith says. Meanwhile, the native grasslands "look like Ireland."

The welcome rain hasn't allayed long-term worries about groundwater and droughts, says Black, the Muleshoe landowner. It came too late to help germinate spring crops, and farmers continued to irrigate.

The Texas Panhandle almost certainly will continue to be locked into extended periods of drought that have persisted across the Southwest for 20 years, says meteorologist Brad Rippey with the USDA.

"People that have been farming out there for a couple decades are concerned," he says, adding that drought could return this fall.

Already it billows off plowed fields during dry spells, including along the Texas-New Mexico border, where rippling piles of it—some 10-15 feet (3-5 meters) high—can clog fields, ditches and roadways. It blows off rooftops like snow, says Smith, who this spring found big mounds formed in his yard overnight.

Farmers have called him to ask if the wildlife refuge could buy their land, which it's not authorized to do.

"Everybody knows that ... the water's going away," he says, driving past

abandoned farmhouses, tree stands that mark long-gone homesteads and rusted irrigation equipment. "Farmers do the best they can with what they've got, but I don't know how many more years we can do this."

There is reason for concern, experts say.

More than half the currently irrigated land in portions of western Texas, eastern New Mexico and the Oklahoma Panhandle could be lost by the end of the century—with 80% of those losses by 2060, according to a study published last year.

But areas throughout the aquifer also are vulnerable. The central part could lose up to 40% of irrigated area by 2100, with more than half the losses in the next 40 years.

Those losses might be slowed as farmers adapt to lower water levels, researchers say. But the projections underscore the need for planning and incentives in vulnerable areas.

## NEW DUST BOWL ZONE

The USDA has identified a "Dust Bowl Zone" that covers parts of Colorado, Kansas, New Mexico, Oklahoma and Texas vulnerable to severe wind erosion and where grasslands conservation is a priority.

Already, reestablishing native vegetation in the sandy soil over the Ogallala has proven difficult where irrigation ceased on former Kansas farmland. The same is true on land outside the Ogallala previously irrigated by rivers, including in Colorado's Arkansas River Valley, where agricultural land dried out before native grasses could be established.

With less rainfall, farmers likely will need to use some remaining groundwater to reestablish native grasses to avoid Dust Bowl conditions,

says study co-author Meagan Schipanski, an associate professor of soil and crop sciences at Colorado State University.

"In an ideal world, there would be some forethought and incentives available" to help farmers make the transition "before there's not enough water there," Schipanski says.

Chris Grotegrut already has planted 75% of his family's 11,000 acres (4,452 hectares) in native grasses; he uses it to graze cattle and sheep and plants wheat directly into native grass pastures.

The rest of the land, about an hour southwest of Amarillo, eventually will be planted in native grasses, too, says Grotegrut, who's seen water levels rise—though not enough to return to full irrigation of his land.

Most farmers aren't transitioning fast enough as the water table drops "from the Panhandle damn near to the Oklahoma line," he says. "Maybe they're using the latest and greatest of equipment and technology in the field, but (that) will not totally offset the change that's coming to them,"

## HELP FOR FARMERS

Many farmers will need incentives and help to transition to grasslands.

The federal crop insurance and conservation programs often work at cross purposes: Farmers sometimes plant crops even if they're likely to fail, because they're covered by insurance. And cultivating land often is more profitable than taking government payments to preserve or restore grasslands.

From 2016 through mid-2021, fewer than 328,000 acres (132,737 hectares) were enrolled in the USDA's Grasslands Conservation Reserve Program in Dust Bowl Zone counties, according to USDA data.

Enrollment for 2021 ended last month, but the USDA has not released the most recent totals.

Although grasslands also can be enrolled in other programs, there was a big push this summer to enroll more in the CRP grasslands program, which allows grazing and was authorized in the 2014 Farm Bill, says Zach Ducheneaux, head of the USDA's Farm Service Agency.

In Texas, fewer than 32,000 acres (12,950 hectares) were enrolled in Dust Bowl counties over the past five years, and 60% of the Dust Bowl counties had no land enrolled.

So the agency sharply increased payments this summer, to a minimum \$15 per acre—higher in priority counties—after they were reduced by the Trump administration, Ducheneaux says.

In Bailey County, where Black lives and no land was enrolled in the grasslands program, payments went from \$4 to \$20 per acre.

But Black, who took a couple hundred acres (81 hectares) of native grasslands out of a federal conservation program last year to provide pasture for his cattle, says the higher payments won't convince him to enroll. "I can make more money without it" and won't be bound by any government restrictions, he says.

Bamert, from the seed company, says some farmers are planting native grasses on their own, rather than through government programs.

But the transition to grasslands and conservation also is hindered by an agricultural banking system that makes it difficult to obtain loans for anything other than conventional farming and equipment, as well as the need to pay off that equipment.

"If you give a producer a choice and flexibility, they're going to engage in soil health practices," says USDA's Ducheneaux, who is advocating for change. "They're not going to continue to stay stuck in that commodity cycle."

Among farmers, ranchers and even municipalities, "there seems to be a real connecting of the dots ... about water and soil stewardship," and it's driving cross-state conversations about solutions, says Kremen, from the Ogallala Water Coordinated Agriculture Project.

But farmers need programs that allow them to earn a living while they make the transition to grasslands over perhaps 15 years, she says.

"There's a hunger for action that wasn't there even five years ago," because of the severity of the water loss, Kremen says. "What's at stake is the vitality of communities that depend on this water and towns drying up and blowing away."

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