

## **Industrial dairy farming is taking over in Wisconsin, crowding out family operations and raising environmental concerns****Rick Barrett, and Lee Bergquist, Milwaukee Journal Sentinel** Updated 9:30 p.m. EST Feb. 11, 2020

ELLISVILLE - Arlin Karnopp doesn't drink the water in his house. Taped to the refrigerator is a sign that says, "Do Not Use." He's afraid his grandchildren will fill their cups from the ice dispenser on the door. Since 2015, results of his well tests show potentially harmful bacteria and nitrates. Karnopp blames manure spread by large dairy farms on a ridge next to his property. "Everything rolls downhill," said Karnopp, 67, a retired over-the-road truck driver. He lives in dairy-intensive Kewaunee County, where cattle exceed people by about 5 to 1. Arlin and Mary Lou Karnopp have a reminder on their refrigerator's water dispenser not to use it. "I'm very disgusted," he said. "If we could only turn back the clock." Turning it back even five years would take Karnopp to a time when Wisconsin boasted more than 10,000 farms — most of them small, family operations passed down for generations. Since then, a drawn-out assault of low milk prices has pummeled America's Dairyland. More than 2,700 Wisconsin dairy farms have gone out of business. Many more face tough decisions this winter as a poor fall harvest has led to soaring prices for cattle feed. Large-scale dairy farming, however, is on a different trajectory. Concentrated animal feeding operations, or CAFOs, are growing rapidly and taking over an increasing share of the state's milk production. Often referred to as industrial or mega-farms, they can house thousands of cows in massive metal buildings. Cows are milked three times a day in an operation that runs around the clock and tankers full of milk head in and out at all hours. Some newer industrial buildings run the length of a half-dozen football fields; farmers have been known to fly drones inside to get a bird's-eye view of their operations. The average size of a Wisconsin dairy farm is about 150 cows. Farms qualify as CAFOs when their milk-producing herds reach 700. Such large operations are a relatively new phenomenon in Wisconsin. The number of these industrial dairy farms in the state has jumped 55% in less than a decade, to 279 farms, Department of Natural Resources figures show. Farms with 500 or more cows had 41% of the state's cow population in 2017, up from 3% in 1997, according to the U.S. Department of Agriculture. Their massive milking operations, popularized in California, shatter the traditional model of Wisconsin farms. With so many cattle, they run the risk of contaminating groundwater and overwhelming lakes, rivers and streams with runoff pollution while making it harder for smaller farms to compete. The question is whether Wisconsin is suited for dairy farming on a grand scale and whether dairy farming as we have known it has a future. The coming decade could tell us.

**Manure: beneficial and problematic** Manure has been a dependable and potent fertilizer for as long as cows have grazed the land. But when it runs off a farm field or seeps into groundwater, manure pollutes. Bacteria and nitrates can poison drinking water, and too much phosphorus from manure and fertilizer can supercharge aquatic plant growth and upend water systems, eventually sucking out oxygen.

**The Dairyland in Distress series is produced with the support of the Pulitzer Center. The center, a nonprofit organization that supports in-depth journalism projects, played no role in the reporting, editing or presentation of the project.** Dairy cows are veritable waste machines; on average they excrete nearly 17 gallons of manure and urine a day. While cities use sewage treatment systems to remove contaminants, most farmers store a mix of manure, urine and water in lagoons and typically spread it across crop fields in spring and fall. A single farm with 500 cows produces as much daily waste as South Milwaukee, based on Cornell University research. A 1,000-cow herd? Think of the 42,000 residents of Fond du Lac. The largest Wisconsin CAFOs — those with 6,000 cows — generate as much manure and urine as 252,000 people, on par with Madison.

They are required to have six months of manure storage capacity and their owners must write plans detailing how and where they'll spread their waste. Smaller farms are not required to use spreading plans. About 37% of the 9 million acres of Wisconsin cropland are covered by such plans, state figures show. "No question, CAFOs are more regulated," said Jim VandenBrook, executive director of the Wisconsin Land and Water Conservation Association from 2012 to 2018 and a former state agriculture department regulator. "But we don't have a handle on whether those practices are being followed because there is so little oversight on spreading." **The most extensive audit of spreading practices in recent years, done in 2017 by the DNR, found that more than a quarter of CAFO inspections turned up some violations of manure application requirements.**

**In August 2018, a lethal combination of manure spreading and heavy rains severely damaged miles of the Sheboygan River near Malone in Fond du Lac County. In just one 575-foot section, DNR employees found 40 dead northern pike — some as long as 30 inches, according to agency records. In a small offshoot of the river, scores of dead fish littered the surface where the last remaining oxygen would have been found.** The DNR alleges that Redtail Ridge Dairy, a large-scale farm, should not have been spreading manure with a rainstorm in the forecast and that the manure ultimately washed into public waters. The case has been referred to the state Justice Department for civil prosecution. The farm's owners, Joseph and Tyler Thome, said they believe other farms in the watershed also bore responsibility for the contamination, according to DNR documents. George Miller, 71, owns land bordering the Sheboygan River. "The farms are getting so big and they have only so much room to put their manure on," he said. "We don't like it, but we don't feel there is much you can do."

In August 2018, a combination of manure spreading and heavy rains damaged miles of the Sheboygan River, killing fish. BEN UVAAS / WISCONSIN DNR

## Kewaunee County water woes

Tucked under Door County, on the shore of Lake Michigan, Kewaunee County is riddled with pockets of shallow soil and fractured bedrock, called karst, that make groundwater more susceptible to contamination. It's also the home of 16 industrial farms — the third-highest amount among Wisconsin counties. "This model of massive animal incarceration in vulnerable areas is simply not a good model," said Lee Luft, a county supervisor and one of a group of residents who pushed regulators for more controls on manure spreading in Kewaunee. The county's rivers that flow to Lake Michigan all fail to meet state water quality standards for phosphorus, which can trigger algae blooms that could imperil aquatic life. In 2014, citizens and six environmental groups petitioned the U.S. Environmental Protection Agency to investigate groundwater contamination, claiming the DNR under Republican Gov. Scott Walker had failed to use its regulatory powers over large farms to protect drinking water. Last year, after a lengthy public airing, the DNR mandated stricter manure spreading limits — the first in years — for a group of eastern Wisconsin counties, including Kewaunee. "I think in the karst areas, we just can't continue to do what we are doing," Davina Bonness, the county's land and water director, told residents at a public meeting this fall. During spring and fall when manure hauling is the most active, her office fields three to five complaints a day about spreading. In September, she said, county staff went door-to-door in a section of Lincoln Township to warn residents not to drink the water. Runoff from an industrial farm after a rain had been draining into sinkholes — a direct conduit to groundwater. Numerous studies in the county over the years have found widespread evidence of wells contaminated with bacteria. One of the most recent — and the most authoritative, using DNA to trace the source of contamination — tied the problem to both cattle and septic systems, according to researchers from the U.S. Agricultural Research Service.

The same researchers have come to similar conclusions in Grant, Iowa and Lafayette counties in an ongoing study in southwestern Wisconsin. Waste from cattle, hogs and humans all turned up in drinking water. "I think that we need to accept and acknowledge our share of the problem," said Don Niles, who milks 3,000 cows in Casco in Kewaunee County, a hotbed in the clash over industrial farms. Niles is a founder of Peninsula Pride Farms, which was formed in 2016 in Kewaunee and southern Door counties and is one of a growing number of farmer-led groups, including CAFOs, that are promoting conservation strategies in watersheds across the state. "We have to know and come to grips with the problem," he said. "Clearly, we in agriculture are not the whole cause of water contamination. But we are a significant contributor." Mary Lou and Arlin Karnopp look through test results of their private well. They are pressing regulators to address drinking water contamination in Kewaunee County. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

Sitting at his kitchen table, Arlin Karnopp, the retired truck driver from Kewaunee, looks over his well tests. Dating back to 2015, they are a mixed bag. Sometimes the wells met state standards for drinking water; other times, they contained high levels of coliform bacteria and nitrates.

This year, for the first time in more than four decades on the land, he and his wife, Mary Lou, have contended with brown water flowing from their faucets. Last February, above-freezing temperatures sent snow and manure-laden soil into his yard, forming a large pond the color of coffee. The industrial farm that spread the manure, Hall's Calf Ranch, took issue with whether manure was in the water, according to DNR documents. But agency records show water samples detected ammonia and phosphorus — both markers for manure. On Oct. 1, the DNR issued the farm a notice that it violated state manure handling requirements. The irony: Karnopp's father once owned the land and Karnopp remembers riding in a tractor doing the same chore. "But not like they do today," he said. "There's just so much of it, they don't know what to do with it." Hall's Calf Ranch on County Road F in Luxemburg typically has about 8,000 calves on its 55 acres. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

**Large-scale farms dominate milk production** More than half of the milk cows in the U.S. were on dairies with more than 1,000 cows as of 2017, according to the USDA's agricultural census. They accounted for 58% of the nation's milk. Two decades earlier, those operations had less than 20% of the milk cows, according to USDA data. On average, dairy farms with 2,000 or more cows have 12% lower feed costs and 20% lower operating costs — per hundred pounds of milk produced — than farms with 100 or 200 cows. The big farms also produce more milk per cow. "The large-scale operations are making a lot of milk, and they're doing it efficiently at low cost. It does put a lot of pressure on some of the smaller, often multigeneration, farms," said Ben Laine, a dairy industry analyst with Rabo AgriFinance in St. Louis. The largest concentration of big dairy farms was in California and Idaho, followed by Texas, according to U.S. farm census data. One survival tactic used by smaller farms has been switching to organic dairying. At times, these farms have gotten twice the rate for their milk, which offsets the higher feed and other operating costs. Even in that niche, however, industrial farms quickly changed the business model. A handful of mega-sized dairies in the Southwest now produce more certified organic milk than all of Wisconsin's 450 organic dairies combined. The market is "oversupplied and competition is fierce," said Adam Warthesen, government relations director for Organic Valley, of La Farge in Vernon County. Critics contend industrial farms get around rules calling for, among other things, a minimum amount of grazing time for cows in order for the milk to be certified organic. It's unfair competition, said Tom Schaub, an organic dairy farmer with 60 cows on Jewel View Farms, on the bluffs above the Mississippi River in La Crosse County. As a result, many farmers have returned to conventional dairy farming, "not because they didn't believe in organics, it's just the economics of it now," said Schaub, who is also president of Westby Cooperative Creamery in Westby. "They have to be able to make their payments and support their farm."

# 'Corporate takeover of dairy production'

As industrial farms take over more of the milk production, they've been recognized for their ability to leverage their size and modernize dairying so that the U.S. can continue to compete in what has become a cutthroat international marketplace.

Operators are managing around-the-clock operations, often with dozens of employees, including professional staff with college degrees in dairy science.

Every three weeks, a livestock nutritionist with a doctorate degree stops at Don Niles' farm and tweaks feed regimens to boost milk output. "I don't get that kind of attention with my diet at home," Niles said.

Still, industrial farms can fail environmentally, sometimes with disastrous results.

In 2018, the second-largest dairy farm in Oregon folded, leaving behind a mountain of debt and 30 million gallons of manure and wastewater.

The 13,000-cow operation south of the Columbia River, near Boardman, opened in early 2017 and at one time had a permit for 30,000 animals. In less than two years it accumulated more than 200 environmental violations and nearly \$200,000 in fines, the largest amount ever issued against a CAFO by the Oregon Department of Agriculture.

State regulators sued to shut Lost Valley Farm down, saying it posed a threat to drinking water wells by allowing liquid manure to overflow from storage lagoons. Thousands of cattle and the farm were sold at auction.

"If we have anything to say about it, there won't be a new dairy operation there at all because we're seeking a moratorium on these new big farms until we can make sure we are protecting our water, our air and our family farmers," said Amy van Saun, an attorney for the Center for Food Safety, an environmental group in Portland.

"There was definite mismanagement. But the problem with an operation that big is, when even something small goes wrong, it can have a big impact," she said.

Most Wisconsin industrial farms are family-owned, although there are outside investors in some operations. Nationwide, it's unclear whether corporate dairy interests have gained sufficient market strength yet to drive out the most efficient independent milk producers, said John Ikerd, professor emeritus of agricultural economics at the University of Missouri.

But dairy farmers cannot ignore the lessons of poultry and pork farms, Ikerd said, where small producers were forced out when food companies established their own operations, with thousands of chickens, turkeys and pigs.

"We are now seeing a corporate takeover of dairy production, which is the last bastion of full-time, independent family farms in animal agriculture," he said. "Unfortunately, this is the harsh reality now confronting smaller independent dairy farmers."

Some large retail chains are bottling their own milk and contracting directly with farmers to get it. In June 2018, Walmart opened a 250,000-square-foot processing plant near Fort Wayne, Indiana, acquiring milk from 30 farms in Indiana and Michigan. The plant was built to supply milk to hundreds of Walmart stores in Indiana, Illinois, Michigan, Ohio and Kentucky.

Walmart's decision to build the plant was backed by millions of dollars in tax incentives from the State of Indiana and local officials seeking about 300 jobs in return.

"This new plant is a perfect example of the kinds of efficiencies Walmart seeks in our supply chain to benefit our customers," Tony Airoso, senior vice president of sourcing strategy said in a statement.

But it left about 100 dairy farmers for Dean Foods Co. without a milk buyer when Dean lost that part of Walmart's business, according to industry analysts. In November, citing a continued decline in milk sales, Dean filed for Chapter 11 bankruptcy protection.

Dean "had bigger, industrywide issues with the consumption of milk products. But the loss of the Walmart business was just another thing they didn't need," said Mark Stephenson, director of dairy policy analysis at the University of Wisconsin-Madison.

## **Farms expand for different reasons**

Ikerd spent much of his career promoting large expansions.

"I supported this process because I thought it was going to make agriculture more efficient and it would be good for farmers and rural communities," he said.

Then he changed his mind.

"It hasn't fed hungry people, it hasn't produced healthy foods and it hasn't supported independent family farms and rural communities," he added.

Scaling back the size of U.S. dairy farms isn't the answer, said Tim Trotter, executive director of Wisconsin's Dairy Business Association.

"Decisions to expand are often made for reasons that have nothing to do with supply or demand," Trotter said. "For example, a child coming home and wanting to buy into the farm. How would we accommodate these kinds of expansions?"

A veterinarian by training, Niles started his Kewaunee County dairy farm in 2001 with a business partner after a stint with agribusiness giant Monsanto Co. in California's dairy-rich San Joaquin Valley.

"People ask, 'Why did they let the CAFOs in?' " Niles said. "In people's minds, they think there was a migration of large farms from California or somewhere that came here and took over our dairy industry."

Instead, some farmers opted to grow to "keep their kids in the business, not milk cows twice a day for 40 years and take some vacations," he said.

His partner was John Pagel, owner of 5,000-cow Pagel's Ponderosa who died in a private plane crash in February 2018 in Indiana with his son-in-law and the pilot.

"Best friend I ever had," Niles said.

When they first met in 1987, Pagel had 74 cows. Today, his family-run dairy churns out a line of cheeses and owns a farm-to-fork restaurant in downtown Green Bay.

## **Disheartening message**

In the 1970s, Agriculture Secretary Earl Butz famously told farmers to "get big or get out" and plant "fence row to fence row." He championed industrial farming.

This fall at World Dairy Expo in Madison, U.S. Agriculture Secretary Sonny Perdue drew sharp criticism for essentially reprising that message specifically to dairy farmers.

"Now what we see, obviously, is economies of scale having happened in America — big get bigger and small go out," Perdue said. "With the capital needs and all the environmental regulations and everything else today, to survive milking 40, 50, 60 or even 100 cows — and that's what we've seen."

The message disheartened some family farmers.

"I went to Madison feeling financially scared and emotionally depressed, but hopeful," said Paul Adams, who has a 500-cow organic dairy farm near Eleva in Trempealeau County. "I came home feeling financially scared, emotionally depressed, unwanted and unneeded."

Brittany Olson left her Barron County farm at 3 a.m. to make it to Madison for the speech.

"To go through the effort to see the USDA secretary, only for him to say that small farms like ours likely have no future, made me feel like little more than a peasant in a system of modern-day feudalism," Olson said.

The mindset that's been pushed on farmers — to continually grow — is one reason for the overproduction that's suppressed milk prices and forced people out of business, said Darin Von Ruden, a dairy farmer from Westby in Vernon County and president of Wisconsin Farmers Union.

"We need to look at something that will benefit all of rural America, not just corporate rural America," he said.

## **No 'one-size-fits-all way to farm'**

Perdue's message in part reflected the growing political voice that owners of larger farms have cultivated.

On Nov. 5, the Wisconsin Senate effectively fired Brad Pfaff, the agriculture secretary under Democratic Gov. Tony Evers — a move with no precedent in at least the last half-century. Although Pfaff was personally popular with many farm groups, the agriculture department had proposed rules that could have placed limits on farm expansions.

The Wisconsin Farmers Union backed the changes.

"We felt very strongly that these modifications were long overdue after the tremendous changes we've seen in the agricultural industry and lots of concerns that have been expressed by people in rural communities," said Kara O'Connor, the government relations director for the Wisconsin Farmers Union.

"We have farms in Wisconsin now that are larger than anyone had ever contemplated in 2006 when this rule was first passed," she said.

But representatives of CAFOs fiercely opposed the changes.

Cynthia Leitner, president of Wisconsin Dairy Alliance, said it's not fair to demonize big farms. The organization was formed in 2018 to represent CAFOs.

"There is no one-way, one-size-fits-all way to farm," she said.

Leitner acknowledged that a glut of milk in the last five years has been brutal on dairy farmers.

But at the same time, Wisconsin cheese plants have brought in milk from other states because it was cheaper, even with transportation costs. Those plants could be looking for new suppliers when a \$500 million processing facility under construction in St. Johns, Michigan, comes on line in late 2020. It is expected to siphon off much of the milk that has been coming to Wisconsin.

"The double-edge sword in this case is what happens if we cannot produce enough milk" to make up for the loss, Leitner said. Her fear is that those Wisconsin processors will expand elsewhere.

"The fight should not be about big and small (farms). It should be about keeping Wisconsin dairy for future generations," she said.

Organic dairy farmer and Republican state Rep. Travis Tranel of Cuba City said he understands why CAFOs draw different reactions.

"At the end of the day, they can put a product on the shelf that is just as safe, just as nutritiously sound as anybody, if not more so, at a cheaper price," Tranel said.

He defended industrial farms' overall environmental track record but acknowledged there are unintended economic consequences. As small farms disappear, and local agribusinesses are consolidated, it's "not good for our rural schools, it's not good for our rural churches, it's not good for our rural communities."

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Water from a rain-soaked field flows between cornfields in Kewaunee County near Luxemburg. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

## **'No one should have to go through what we went through'**

Many of those who live near industrial farms would argue the consequences go far beyond local spending.

In Juneau County, a lawsuit filed in November 2018 alleges that Central Sands Dairy, an industrial farm that milks more than 4,100 cows, and Wysocki Produce Farm Inc., a vegetable grower, knew that monitored wells showed high nitrate levels dating back to 2008 but failed to tell neighbors or state authorities.

The case is still being litigated and involves more than 300 plaintiffs — including a Nekoosa mother who lost a baby at 23 weeks to a severe birth defect.

Tim Huffcutt, a spokesman for Central Sands, declined to comment on the lawsuit. He noted, however, that a coalition of three farms, including Central Sands, has agreed to provide bottled water and, as of mid-November, had coordinated the installation of 48 water purification systems to homes with contaminated wells.

Nitrate has been associated with a condition called blue baby syndrome, which reduces the amount of oxygen in a baby's blood.

"They don't turn blue, but grayish purple," toxicologist Sarah Yang of the state Department of Health Services told a group of citizens this fall in Amherst at a meeting about high nitrate levels in Portage County.

According to Yang, infants, pregnant women and women planning to become pregnant, are at the most risk from high nitrates. Some studies suggest it may cause birth defects, thyroid problems and colon cancer.

The EPA conducted its own groundwater investigation in a 30-square-mile area of Juneau County that included Central Sands in late April and early May 2018. It found that of 200 samples, 130 had nitrate levels higher than the drinking water standard. All were in locations where groundwater flowed from the direction of farm fields. Wisconsin's nitrate standard in drinking water is 10 parts per million.

A month later, officials in Juneau and Wood counties found that 42% of 104 residential wells exceeded the nitrate drinking water standard.

Celina Stewart, one of the litigants in the lawsuit, has blogged about the anguish of losing a baby. She also has urged the DNR not to renew a five-year permit for Central Sands — something it has not yet done.

In her comments to the agency, Stewart said her well tests showed nitrate levels ranging from 15 parts per million to more than 40 parts per million and that she was only aware of the lower reading while pregnant.

"No one should have to go through what we went through because of water," Stewart wrote. "We should be able to go to our faucet and turn it on and safely drink water from our well and not worry about getting sick or dying."

*Andrew Mollica of the Journal Sentinel staff contributed to this report.*



**Lee Bergquist** has covered the environment, conservation, land use and related regulatory issues for the Milwaukee Journal Sentinel since 2002. He was part of a team named a Pulitzer Prize finalist in 2003 for coverage of chronic wasting disease in the state's deer herd and has been honored by the National Press Foundation for his reporting on climate change. An Eau Claire native and UW-Madison graduate, he joined the Journal Sentinel in 1983 and also has extensive experience covering the State Capitol, local government, agriculture and business.

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**Rick Barrett** is a business reporter who covers agriculture, large manufacturers such as Harley-Davidson, the telecom and defense industries, and other topics. Barrett's coverage of Wisconsin's struggling dairy industry received a 2019 National Headliner Award — his second. His work also has earned a Gerald Loeb Award for outstanding business reporting, a Barlett & Steele Award for investigative reporting, and has been recognized by the Society of Professional Journalists, the Society of Environmental Journalists, and the Association of Health Care Journalists. Barrett lives on a hobby farm near Appleton where he takes care of donkeys. He joined the Journal Sentinel in 2000.

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## About this series

This story is part of a [yearlong effort](#) by the Milwaukee Journal Sentinel and USA TODAY NETWORK-Wisconsin to examine the plight of the state's dairy industry. Journalists from newsrooms across the state are exploring how sagging milk prices, economic factors and global forces are driving hundreds of farmers out of one of the state's most important industries.

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DAIRYLAND IN DISTRESS

# Struggling Wisconsin dairy farmers building a future with hazelnuts, specialty milk, goats and creative thinking

Rick Barrett, Milwaukee Updated 4:43 p.m. EST Feb. 18, 2020

Show caption

Paul Jereczek doesn't want to be the one who loses his family's farm, not after four generations before him made it work.

He and his father, Ken, milk about 200 cows on land in Trempealeau County that's been in the family since 1873.

The last few years have been challenging, and not just because milk prices have been stuck in an economic valley. The Jereczeks have difficulties finding hired help, too, which means the barn and the fields take over what could be family time.

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"Five or 10 years from now, I don't think we will be milking cows anymore, realistically," the 35-year-old farmer said. "Financially we are fine, but I have four young children who I don't spend nearly enough time with."

Jereczek is trying to build a bridge to the future even as he crosses it. He has planted more than 1,000 hazelnut trees on 3 acres previously used to grow hay — a small piece of the farm that someday could pay off well if the perennial crop takes hold.

Worldwide, Turkey and Italy dominate the hazelnut industry. Domestically, Oregon has more than 800 growers who produced nearly all of the U.S. crop valued at \$92 million in 2018.

## More on the future of dairy

- [As industrial dairy farms grow, so do concerns about their effect on the environment](#)
- [Dairy farmers try to build a future with hazelnuts, specialty milk, goats and creative thinking](#)

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Hybrids have been developed that thrive in a northern climate and are hardy enough to survive Wisconsin winters. It costs Jereczek about \$5 a tree to plant them and there's nothing to harvest until at least the third or fourth year — which for him is still a couple of years away. But because it takes a while, the marketplace could be less vulnerable to crashing from everyone jumping in at the same time.

The University of Wisconsin and University of Minnesota are collaborating on a "Million Hazelnut Campaign" to plant 1 million trees across the Upper Midwest. They estimated in 2017 the annual net income from fully mature hazelnut trees at between \$3,400 and \$4,200 an acre. Further, the roots systems prevent erosion, don't need irrigation and are drought resistant.

"Is it going to save the farm? That's the best-case scenario, but I'm not banking on it yet," Jereczek said.

Still, he remains hopeful his family's future will unfold on the farm where he grew up and returned to after studying English at the University of Wisconsin-River Falls.

"I want my kids to have a chance to do something with the land, agriculturally, and I don't see dairy being it, at this level," he said.

Wisconsin has billed itself as America's Dairyland for nearly a century. But with industrial farms on the rise, its next generation of children may never know what it's like to see red barns and Brown Swiss cattle in pastures on hillsides.

Dairy farmers "are pretty exhausted, mentally, trying to figure out how to survive," said Angie Sullivan, agriculture program supervisor with the Wisconsin Farm Center, part of the state agriculture department, where farmers can get help untangling their finances and managing stress.

Many are also asking themselves whether surviving is enough, whether an operation of 50, 100, even 200 cows is still the best use of their land and talent.

This year alone, about 800 dairy farmers in Wisconsin left the business, a rate of more than two per day. Many had small family farms. They joined an exodus from dairy that has sped up in recent years but has gone on for decades.

Some of those farmers are now growing cattle feed for large dairy operations. Some are raising beef cattle. A few have carved out niches that were a surprise, even to them.

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One of three of Paul Jereczek's part-time employees pushes feed for dairy cows on the family farm in the Trempealeau County village of Dodge, Wis. MARK HOFFMAN, MILWAUKEE JOURNAL SENTINEL

## Old farm, new use

Tom Rohland sells wine these days, along with gourmet olive oils and flavored balsamic vinegar.

He also rents out his century-old barn, which once housed 55 dairy cows, for weddings, class reunions, maybe a Christmas or retirement party. His manure storage pit is long gone; it's a fishing pond now.

Every day for about 15 years, Rohland and his family milked cows and tended to their farm in Clark County, where cattle outnumber people 4 to 1. They grew fruit on land not used for cattle feed.

There were good times in dairy, but they were always followed by low milk prices or poor weather for growing crops. It was hard, relentless work. Rohland, then in his 40s, had metal pins and screws in his hands and ankles, the result of farm injuries.

"As time went on, it seemed like it was always an uphill battle," he said.

With his children grown up and off the farm, and his optimism about the future of small dairy operations drained, Rohland sold his cows.

Relying on off-farm jobs for several years, he and his wife, Sheri, turned their wine-making hobby into a full-time business, Munson Bridge Winery.

"Some people thought we were nuts," Rohland said. "There weren't any wineries in the area."

But the Rohlands had seen wineries in other parts of the state that were so tucked away in the hills they could barely be found — and those were packed with customers. So they gave it a spin themselves.

"We're still living in the same place with the same buildings, but it's much more enjoyable," Rohland said.

MILWAUKEE JOURNAL SENTINEL

## Farming evolving

Before it became the nation's leader in dairy farming, Wisconsin was known as the wheat state. And for more than 150 years, parts of Wisconsin have grown chewing tobacco, a small-acreage crop that farmers used to say was their "mortgage payment" because of its profitability. In the 1960s, there was a large loss of dairy farms after the industry transitioned to refrigerated bulk tanks for collecting milk, replacing 10-gallon steel cans.

Farming has been evolving since its very beginning, said Dennis Shields, chancellor of the University of Wisconsin-Platteville, which has a large dairy science program.

"We've always adapted," he said. "You show me a successful farmer, and I'll show you someone who is able to adjust and adapt."

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But farmers are now engaged in a global marketplace marked by overproduction, fierce competition, changing consumer tastes, mega-size farms and environmental issues. A trade war with China, the European Union or Mexico can upend business for months, even years, at a time.

Given that volatility, one thing seems certain: The small dairy farm from 10 years ago won't be around in another 10 years if it doesn't keep evolving, said Brody Stapel, a dairy farmer from Cedar Grove and president of Edge Dairy Farmer Cooperative. "Adaptability," Stapel says, "is the key."

Wisconsin still produces more cheese than any other state — more even than most countries. But in the last few years, thousands of dairy farmers have lost money practically every day they've milked their cows, year-round, as an oversupplied market has kept prices depressed. Many farms milking between 50 and 100 cows are at risk of shutting down because they don't benefit from economies of scale.

"As much as I love small dairy farms, we don't have very many automobile manufacturers that build 400 cars a year. We did at one time," said Jack Britt, a dairy consultant and professor emeritus at North Carolina State University.

"So, should dairy farmers move to a new enterprise? Yes, but only if they are innovative and willing to learn new methods and systems. I don't think there is a single crop or area that could replace dairy ... but the opportunities are broad if one focuses on the end market or the emerging markets."

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Dairy farmer embrace new business and new business models

## **Can you co-exist with a Walmart?**

The question for many Wisconsin farmers, then, is how to get from point A to point B.

"I would never suggest abandoning the family farm," said Gov. Tony Evers. "I think it's still a great possibility, a great job for folks. People who raise their kids on farms will vouch for that."

Evers grew up in Plymouth, a town once surrounded by scores of dairy farms.

"These were good farm families," he said. "They worked hard and were able to make money. We need to get back to that time."

Steven Deller, agricultural economist at University of Wisconsin-Madison

**It's like, can you co-exist with a Walmart? Yes, you can. But you have to change.**

The problem is farmers have been getting a milk price similar to what it was 30 years ago. Expenses are very much up to date.

Smaller dairies can still survive, but only if their operating costs are low enough or they have a unique product that fetches a higher price, said Steven Deller, an agricultural economist at the University of Wisconsin-Madison. "It's like, can you co-exist with a Walmart? Yes, you can. But you have to change."

One of the best ways? "Make sure there are off-farm employment opportunities," Deller said. "It keeps the family afloat, and therefore it keeps the farm afloat" as farmers try new paths.

Not wanting to exit dairy, but disillusioned with milking cows, some farmers have switched to goats. This year, according to the most recent U.S. Department of Agriculture data, Wisconsin leads the nation with more than 72,000 dairy goats, easily topping California which came in second with 40,000, followed by Iowa and Minnesota.

Worldwide, goat milk is more popular than cow milk and it's gained ground in the U.S. with a changing consumer marketplace and immigrants accustomed to its taste.

Farmers should be mindful of these kinds of societal adjustments, Britt said, and develop products that respond to them.

Not too many years ago, it was generally accepted that small breweries would disappear as large beer makers kept growing, taking control of the marketplace.

"Then," said Jack Uldrich, a futurist from Minneapolis, "there was this explosion of microbreweries."

## **Diversification key**

This year, with \$8.8 million in state funding, three UW System schools — Platteville, River Falls and Madison — launched plans for a Dairy Innovation Hub that's expected to create an advanced dairy management academy and improve labs and farms devoted to research.

The hub is looking out 10 or 20 years on "substantial innovations" for the industry, said Scott Rankin, chairman of the food science department at UW-Madison. "The small and medium-size producer is on everybody's mind in these discussions."

UW-Platteville has a 400-acre research farm with a 200-cow dairy herd. It's installing robotic milking machines so that dairy science students can learn by using the latest technologies.

"We are not going to come in and save the farms ourselves. But we are going to help them with the intellectual support they need and we're going to be the source of the workforce — the people who will manage these farms," said Shields, of UW-Platteville.

"I think we should be America's Dairyland *and* other things," he said.

The chancellor said there wasn't much that could be done about small dairy farms already lost. "We can't sort of resurrect them. But we can make the future dairy farmers much more adaptable and responsive to the cycles in the industry."

Wisconsin, Evers says, needs a diverse agricultural base that includes farms of all sizes. The state ranks first in the nation for snap beans, cranberries and ginseng, third in potatoes and fifth in cherries.

"In our state, one of the few areas making progress, monetarily, is fruits and vegetables," the governor said. "Not everybody can have an orchard, that's for sure, but I think we need to help all farmers diversify as much as possible."

At the same time, Wisconsin leaders have continued to invest heavily in dairy, even sending trade missions to China and Vietnam to promote products. They may be encouraging diversification, but they're not walking away from a \$45 billion industry.

— Dairy cows graze in Cochrane. Scenes like this will become less frequent in the future in Wisconsin. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

## Searching for new revenue streams

Steve Kelm, a dairy science professor at the University of Wisconsin-River Falls, said he's confident dairy farmers will develop new revenue streams inside and outside the industry.

"In California, that was almond trees, walnut trees and grapes in the Central Valley. Wisconsin is going to be similar in that regard, whether it's ginseng and things adapted to our environment, or berries, or raising dairy beef cattle," Kelm said.

Already, some of the state's biggest livestock farms are moving into energy production by converting manure into renewable gas.

Smaller farms are diversifying out of commodities markets and into areas such as dairy cattle genetics, raising young animals for bigger farms and producing specialty milk for artisan cheese plants. They're looking at raising alternative crops that are on the rise, such as hemp.

Looking further into the future, Wisconsin may be helped by climate change.

"The biggest impact of climate change is going to be the availability of water," Britt said. "Our forecast is that dairy is going to move north to places that have plenty of it."

Leading dairy states such as California, New Mexico, Texas and Arizona will have difficulties getting enough water. Great Lakes states, including Wisconsin, Minnesota and New York, will be magnets for growth.

That growth, however, would have to be managed — and safe. Some of the nation's largest dairy farms, known as concentrated animal feeding operations, or CAFOs, are in the West. One of them, in Oregon, is licensed for 70,000 cattle.

## Read the stories of dairy farms that shut down in 2019

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The average size of a Wisconsin dairy farm is about 150 cows. But that number is rising because the number of CAFOs in the state has jumped 55% in less than a decade to 279 farms.

With so many cattle, industrial-scale farms run the risk of contaminating groundwater and overwhelming lakes, rivers and streams with runoff manure and fertilizer pollution. Rural water-well contamination is under growing scrutiny in Wisconsin.

"There's going to be a natural push by the public and the government to insist that we don't contaminate our groundwater," Britt said.

Cows themselves also will change. Dairy cows of the future will be a milk-producing powerhouse, the result of crossbreeding and gene editing. They will have implantable, microscopic sensors to monitor their health and well-being.

The data will be integrated with information gathered across an entire farmstead, down to the bacteria in soil where cattle feed grows. Farmers will be able to use epigenetics, in which specific livestock genes are turned on or off, to trigger changes in the animal's biology.

"Robots and automated systems will do much of the routine work on farms 50 years from now. This will benefit cows because they crave consistency," Britt said.

Dairy farms of the future could even produce specialty milks that are therapeutic for cancer patients or the elderly. Already, some genetically engineered cows are being used to manufacture human antibodies that could someday be used to treat infectious diseases like Ebola and influenza.

"Give yourself permission to think differently about the future," Uldrich said. "The one thing I say as a futurist is, if your idea doesn't sound crazy, you're not thinking hard enough. If it sounds plausible, it's already happening."

In the Netherlands, the world's first floating dairy farm has been launched in an urban area where rising sea levels have made farmland prone to flooding. The three-story raft, with glass sides, is home to 32 cows. Its electricity is generated from floating solar panels and drinking water comes from a rainwater collection system.

The cows can move freely from their stalls to an area where they're milked by robots. When tides allow it, they can cross a bridge to a dock and pasture, according to FarmingUK, a British publication.

Three companies behind the project are considering a floating chicken farm and greenhouse aimed at providing fresh food for local markets as well.

## **A nuisance becomes a moneymaker**

The move into energy production is a classic example of a new revenue stream emerging from a chronic problem, in this case what to do with the prodigious amount of manure created on livestock farms.

Large-scale dairy farms are harnessing methane in manure and selling it as an alternative to traditional natural gas. For years, some farmers with anaerobic digesters — there are currently about 40 operating in Wisconsin — have tapped the naturally occurring gases in waste to generate electricity, selling what they didn't need to utilities.

The shift to renewable gas, also called biogas, is being driven by federal and state incentives — and in some cases subsidies. Once the methane is pumped into an interstate pipeline, it's considered a renewable fuel.

Burning renewable gas, rather than allowing the methane to float into the atmosphere, has appeal to companies that need to meet carbon reduction mandates or want to shrink their carbon footprint.

"We went from something that was costing us money, to getting a check back at the end of the month," said J.J. Pagel, owner of 5,000-cow Pagel's Ponderosa in Kewaunee County.

Pagel has a partnership with DTE Energy, a Detroit-based company, which built a system on his farm to help make the methane marketable. DTE transports the methane to a location in Manitowoc County, where it's injected into a natural gas pipeline.

The company has similar deals with four other farms in Kewaunee and Manitowoc counties and has projects in the works with four more farms, including Rosendale Dairy, the state's largest dairy farm, in Fond du Lac County.

## Creating innovative products

Melissa Hughes, the new executive director of the Wisconsin Economic Development Corp., said one reason she took the job was to address dairy issues.

Previously, she was a top executive at the billion-dollar cooperative Organic Valley, based in La Farge. During her 15-year tenure there, as general counsel, the number of family farms in the cooperative grew from 500 to 2,000.

Hughes said she'd like to help dairy farmers develop markets.

"I don't see any immediate solutions, which is heartbreaking, but I think that looking at the supply chain and creating innovative products is a way to drive prices up for the farmers," she added.

Other states are also trying to find ways to help struggling farmers stay in agriculture.

Before she and her family head to church, Kendra Thewis, left, feeds the calves after the morning milking on her family's farm in rural Ashland County near Mellen. Annette Trescher, right, sweeps around a barn cat while doing morning chores on her family's farm in Cashton. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

Vermont, the biggest dairy-producing state in New England, has helped some dairy farmers transition into agri-tourism, growing grapes and producing fruit for hard cider. The legalization of marijuana has created another crop opportunity.

Hughes took over WEDC as it continues to oversee its largest project to date: the massive Foxconn manufacturing plant in Mount Pleasant. That's in line with the agency's typical formula: offering manufacturers loans, grants and tax credits in exchange for creating jobs.

Hughes doesn't see additional loans as especially helpful for dairy farmers. "Just giving them more debt is not a solution," she said.

But the agency could do more to cultivate the next generation in dairy, said Sarah Lloyd, a dairy farmer from Sauk County and a Wisconsin Farmers Union board member.

"If WEDC can give big chunks of money to Foxconn, why can't it give small chunks to farmers to re-energize their situation?" she said.

## From dairy to berries

Rohland, the winemaker, gives some straightforward advice to farmers who want to find that new energy outside dairy. Take stock of your skills and assets, and don't be afraid to try something new. Be careful, financially, and have a backup plan.

"Unless you try, you'll never know," he said.

After nearly 40 years as a dairy farmer, Greg Zwald of St. Croix County never imagined he'd launch a new career.

"I really liked dairy," Zwald said. "I expected to retire from it."

■ Former dairy farmer Greg Zwald inside of the renovated barn he uses as an event space at his White Pine Berry Farm outside River Falls. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

Zwald was a partner, with his brother, in a dairy operation that expanded to 600 cows and was doing well. But they didn't agree on how family members would enter the business and it caused friction.

"I decided it was better that I leave, rather than try to push my way, my thoughts," Zwald said.

Now, he and his wife, Irma, own White Pine Berry Farm, which sells fruits and vegetables to the general public. They also have a corn maze and pumpkin patch in the fall.

There was some culture shock going from running a large dairy farm to managing a pick-your-own berries operation.

"You've got to like people and you have to assume that some of them are going to step on your berries. But one of our goals is to get kids, families, to the farm so they understand this is where their food comes from," Zwald said.

Starting over wasn't easy.

"Financially, it's been kind of break-even. But this year was good, and we're adding a building that will have a retail center in it," he said.

Zwald has picked up a job managing the UW-River Falls research farm, keeping him involved with livestock.

For most of his life, his income was at the mercy of commodities markets. Dairy farmers don't know what they'll get paid for their milk until 30 days after it leaves the farm.

With the UW-River Falls work, Zwald said, "I am actually getting a regular paycheck for the first time in my life and I have more free time."

■ Former dairy farmer Greg Zwald walks to the renovated barn he uses as an event space at his White Pine Berry Farm. MARK HOFFMAN / MILWAUKEE JOURNAL SENTINEL

## Challenging times

Wisconsin's remaining dairy farm families are remarkably resilient. They weathered the Great Depression and the milk strikes of 1933. They've toughed it out through numerous downturns, recessions, poor crop years, trade disputes.

"I wouldn't bet against anyone who, for the last four years, has gotten up at 5 a.m. on Christmas Day to milk cows and provide for their family the best they can," said Kelm of UW-River Falls.

What's been different about the recent downturn has been its duration, five years, and its severity — the highest number of dairy farm losses in Wisconsin, on a percentage basis, going all the way back to the Great Depression.

## Wisconsin's dairy crisis in 6 charts

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"I think a lot of farmers have already made the choice to quit. They are going to milk cows until their feed is gone and then they're done," said Travis Tranel, a dairy farmer and Republican state representative from Cuba City.

"It's been a challenge and the next six months could possibly be the biggest challenge. It's going to be a long time until May," Tranel said.

He's particularly bothered when he hears that young people don't want to farm anymore. "That could not be further from the truth. They want to farm, but they just can't afford it," said Tranel, whose family has a 600-cow organic dairy.

The loss of dairy farms is especially noticeable in southwest Wisconsin.

"Drive around any of these smaller towns. The banks are closing, the car dealerships are closing," Tranel said. "As I drive by those red barns, I always smile and think those were the good old days when a mom and a dad probably raised five or 10 kids in that house on 150 acres and they milked 40 cows. As those barns come down, my kids aren't even going to know that's what Wisconsin used to look like."

The losses could have far-reaching consequences beyond rural communities.

"The success of this nation is because pretty much nobody has to worry about where their food comes from," he said. "If we have gotten to the point where the very people who have made us successful can no longer pay their bills, I think we really have to question if that's OK."

"As a society, I hope that we don't find it acceptable."

### Can you survive the dairy crisis?

Explore the forces affecting a signature Wisconsin industry by navigating through common scenarios faced by dairy farmers.

## Hopeful for the future

Some might think that what Jereczek has done, planting hazelnut trees, goes against the grain of Wisconsin dairy tradition.

But the Jereczeks understand tradition. Paul's great-great-grandfather, Jacob Jereczek, moved to Trempealeau County in the early 1860s from Poland. After the Civil War, he and his sons bought three farms and were among the first immigrant families to settle in the area.

Paul and Ken have kept the farm current, investing in technology such as automatic calf feeders and health monitoring devices that are attached to the cows' ankles.

They understand that every generation in farming has its challenges. But the record amount of rainfall this year, which kept farmers out of the fields for spring planting and ruined some of the harvest, reminded Paul why he planted hazelnut trees — a crop that keeps on giving year after year once it gets started.

"I am hopeful," he said. "I think it's a worthwhile investment."

He's recycling dirty livestock bedding from the dairy to fertilize the trees.

The worst-case scenario, if the market for hazelnuts in Wisconsin fails to materialize?

"I will have a bunch of nuts to feed to the cattle," he said.

These days, a dairy farmer can't afford to waste anything.

*Lee Bergquist of the Milwaukee Journal Sentinel contributed to this article.*



**Rick Barrett** is a business reporter who covers agriculture, large manufacturers such as Harley-Davidson, the telecom and defense industries, and other topics. Barrett's coverage of Wisconsin's struggling dairy industry received a 2019 National Headliner Award — his second. His work also has earned a Gerald Loeb Award for outstanding business reporting, a Barlett & Steele Award for investigative reporting, and has been recognized by the Society of Professional Journalists, the Society of Environmental Journalists, and the Association of Health Care Journalists. Barrett lives on a hobby farm near Appleton where he takes care of donkeys. He joined the Journal Sentinel in 2000.

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## About this series

This story is part of a [yearlong effort](#) by the Milwaukee Journal Sentinel and USA TODAY NETWORK-Wisconsin to examine the plight of the state's dairy industry. Journalists from newsrooms across the state are exploring how sagging milk prices, economic factors and global forces are driving hundreds of farmers out of one of the state's most important industries.

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## [An Industry in turmoil](#)

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