

ROOTS AT RISK

EVEN A SOLID, CENTURY-OLD OPERATION FACES CHALLENGES,
UNCERTAINTY

On the lawn of a ranch house abutting rolling acres of emerald pasture, a red-haired girl, almost 7, leads a calf in circles with the help of her family.

It's early July, and Jillian Dammann is getting ready to show her bottle calf, Olaf, at the Page County Fair. Her parents, Justin and Jennifer, are teaching her how to lead him, and her little brother, Jayden, is helping.

Named after a character in Disney's "Frozen," this calf from the Dammanns' livestock breeding operation lost its source of sustenance when its mother died. So Jillian helps rear it, feeding Olaf milk from a bottle that's bigger than the pink cowboy boots she wears, here in the southwest Iowa county where Jessie Field Shambaugh founded 4-H clubs more than a century ago.

Jillian is currently one of two possible heirs to a business that's been in her family for five previous generations. Her training with Olaf is more than an extracurricular activity; it's an investment in the legacy of this family and the future of this farm, this county and this country.

For the family to continue its legacy, it will need to navigate the subtle but sweeping forces of change that are transforming America and its place in the world.

Two massive demographic shifts head the list: Americans are rapidly graying, and the nation is becoming more racially and ethnically diverse.

"Either one of these by itself would be the defining demographic drama of its era," said Paul Taylor, a Pew Research Center fellow and author of "The Next America: Boomers, Millennials and the Looming Generational Showdown."

"The fact that they're happening together could be a recipe for stresses in social cohesion."

Then layer in other dramatic shifts, including the increasing impact of the global economy, rapid technological advances and concerns about the climate's health. They combine to leave many Americans with an unsettled sense of the future.

In Iowa, these profound changes are perhaps best seen through the eyes of the people who for centuries have fed America and the world.

The Iowa farm family, with its deep community roots, extended family ties and a large dose of savvy born from living close to the soil, finds itself at the epicenter of a new cultural and economic landscape.

In rural America, the aging of the population and ever-bigger farms enabled by technological advances are already depopulating the countryside.

"It is almost inevitable that there are going to be less farm families farming in the state of Iowa, which in turn means less schools, less churches, less communities. And it just kind of snowballs," said Justin Dammann, Jillian's father. "I think as we go forward, the big question mark is: How is it going to look?"

He fears Iowa will one day resemble parts of Nebraska and other rural states that have seen small family operations swallowed up by corporate farming and consolidation, leaving vast stretches of land with few towns in between. That future would see fewer families finding it viable to stay in farming, fewer shoppers in fewer stores on Main Street, fewer schools and fewer opportunities in the community for his kids.

As they circle the yard, little Jayden hangs on to the end of Olaf's rope, followed by Justin. Jillian tugs the rope where it's closest to the calf's face, and Mom, Jennifer, holds its tail.

The Dammanns have thrown all hands into a vast and uncertain future, as the family has for generations.

If ever a family was equipped to face uncertainty, it would be the Dammanns. Their farm has survived waves of tumult since its 1901 founding by a German immigrant.

The operation outlasted the Great Depression of the 1930s, a destructive tornado in 1964, the farm crisis of the 1980s, consolidations that squeezed the family out of the swine and poultry industries, drought in recent years, and the latest challenge, corn prices less than half of what they were a year ago.

Outside the boundaries of the family's acres, one-room schoolhouses have shuttered, and districts merged. Towns disappeared from the map. Young people moved away, as the old folks got older.

The passing years also brought times of promise, fostered in part by this family's commitment to preserving the land for subsequent generations, as well as its adaptability to a changing industry.

Technology has transformed the barn of yesteryear, once filled with hand implements. Now sleek, computer-guided machines work the land with pinpoint accuracy.

Pressure to keep up with competition led this farm to grow from a 160-acre plot to 7,100 acres of cropland and pasture that's spread among nine counties in two states, Iowa and Missouri.

Four generations are rooted here, including Arnold Dammann, 79, whose grandfather founded the farm and whose father imparted to him the frugality of Depression-era life; Arnold's son Danny, who entered the business just as the 1980s farm crisis took hold, shaking his confidence that he could continue doing what he loved; Arnold's grandson and Danny's son, Justin, 34, who as manager of the farm is at the core of today's operation; and, representing the fourth generation, Justin's son, Jayden. He's just 4, but with his bins of toy tractors and drawers of iconic green John Deere T-shirts, he's viewed as the best prospect to take over one day.

Jillian isn't sure she wants to farm, but by proximity alone, she's learning the basics. The culture in which her family is raising her, on an Iowa farm rich with history, teaches her how to care for animals and how to nurture the Earth and its creatures.

Jillian struggles as she tries to lead Olaf, who pulls her away from her intended destination.

She begs her parents to turn back. But Justin won't let her give up.

"Tough times," says her father, "make people stronger."

"No, they don't!" Jillian protests.

Her father laughs. His family's history is rooted in struggle, though they now live in plenty.

"Yeah, they do," he says knowingly. "Wanna do another round?"

TOWNS GRAY, SHRINK

AS THE POPULATION AGES AND YOUNG PEOPLE GO TO WHERE THE JOBS ARE, MANY FARM COMMUNITIES WITHER

On U.S. Highway 169 in Arispe, a southwest Iowa town of 100 people, a gas station is one of the last holdouts of convenience in a place where a grocery store, bank, coal yard and tavern have all been shuttered.

The auto shop is so remote and weathered that a passer-by might think it's one of the vacant relics found across Iowa in towns whose boom years have long passed. But Frank's Service is still very much in use.

Every morning, in hourly shifts starting at 6 a.m., a handful of old-timers gathers at the shop for coffee, doughnuts and chatter. If Frank Eighme, the shop's 78-year-old namesake, isn't doing oil changes or fixing flats, he joins the group, sitting outside the garage in low-to-the-ground, gray plastic chairs built for children.

It's been many years since tykes fidgeted in those chairs. A Frank's regular bought them soon after the school here closed down -- in 1994.

The scene reflects a rapidly aging America, one of the fundamental demographic, technological and economic changes that are sweeping the nation — and brewing anxiety about the future.

Like many rural towns across Iowa and nationwide, Arispe has experienced a population shuffle that has seen the number of young people decline as remaining residents grow older.

In the 30 years ending in 2010, the national median age rose by more than seven years, to 37.2. Iowa aged even more, rising to 38.1. By 2040, Woods & Poole Economics projects that people age 65 and older will constitute at least 20 percent of residents in 83 out of Iowa's 99 counties.

Meanwhile, the proportion of the population under 18 is shrinking, declining from 28 percent of Americans in 1980 to 24 percent in 2010. A dip to 23 percent is expected by the next census.

What once was a triangular spread of population nationwide — lots of kids at the bottom, fewer middle-age people, a narrow tip of elders at the top — now looks more like a rectangle. Each day from now until 2030, 10,000 baby boomers will turn 65, according to the Pew Research Center.

"This kind of extensive aging is brought about by the very big baby boom cohort waiting at the top of the age structure, and it's very hard to fill in the bottom," said William H. Frey, a demographer and senior fellow at the Brookings Institution.

This new shape of the population will challenge society in supporting its oldest and youngest members.

The number of working-age people compared with the young and elderly — known as the "dependency ratio" — will rise sharply, according to the Pew Research Center. That means the cost per worker to support those dependents is going up.

Communities that target more funds toward social programs for a growing number of seniors may face cutting services and educational opportunities for youth.

NATION'S RURAL AREAS SEE BIGGER AGE SHIFT

In rural areas, the shape shift is more pronounced, driven by a cycle of shrinking opportunities. Technological advances mean fewer workers are required to operate most farms, and the high cost of land and equipment makes it harder for young farmers to get started. With fewer jobs available, young people migrate to cities for work.

Then, with fewer young families on the farms or in nearby small towns, longtime businesses close, whittling remaining jobs. Schools close or consolidate with those in other towns. Families have to drive farther just to buy groceries.

"In rural areas that don't have real vibrant economies that attract young people, when you lose those young children, you don't get them back," Frey said.

The impact of an aging population with fewer kids can be felt in increased need for medical care and long trips to get it. For decades, the Dammann family in southwest Iowa has had to make 80-mile drives to Omaha for more advanced care than the local medical center in Clarinda can provide.

And it can be seen in tiny graduating classes and eventual school closures.

Though Iowa's school enrollment grew from 1991 to 2011, it ranked 37th in the nation for its increase. Roughly 10 to 15 school districts in the state have closed each decade since 1970. Already since 2010, 21 districts have closed, leaving 338.

Influenced by a steady decline in school-age children in the area, Justin and Jennifer Dammann decided to send their 7-year-old daughter, Jillian, to private school rather than public school in their hometown of Essex.

Since the 2002-03 school year, the Essex district has seen a 21.5 percent drop in enrollment, to 219 students. Neighboring districts also saw sharp declines. In 10 years, South Page lost half its students, dwindling to 158.

"One of our decisions why to go that way was because we felt that by the time our kids graduated, the Essex school may not be there," Justin said.

Essex Superintendent Paul Croghan said the solution for budget-strapped rural school districts is to share teachers, videoconference with classrooms outside the building and use online courses.

"We would love to be there face to face, but is that always feasible?" Croghan said. "No."

FARM CRISIS SPED URBANIZATION TREND

More than 60 percent of Iowa municipalities have lost population since 2010, and cities with fewer than 500 residents lost 3 percent of their populations combined, according to an Iowa State University analysis of census data.

Meanwhile, 44 percent of statewide growth from 2010 to 2013 occurred in Iowa's 10 largest cities. The urbanization trend can be traced back to the Great Depression, and it accelerated when another depression hit agriculture in the 1980s.

Many family farms were wiped out during the 1980s farm crisis. Those that endured got bigger, while smaller farms found it harder to compete. And lots of people who lived through those years became disenchanted with the struggle.

"I had to make a choice between keeping my family fed and maintaining a tradition," said Bill Schreck, who left his family's longtime Carroll County operation 12 years ago after decades of working a second job to make ends meet.

Schreck had once hoped his children would continue the family legacy in farming, but after making it through many lean years, "I encouraged them to look at other avenues."

For the towns hit hardest by the graying of their population and flight of their youth, simply imagining a community's future can be hard, if not heartbreaking.

Nancy Jarred, 74, is the mayor of Tingley, a town eight miles south of Arispe, in Ringgold County. As of the 2010 census, nearly one in three of Tingley's 184 residents was 65 or older, up from 2000, when it was about one in four.

Jarred worries that her town won't be around in 15 years. "The businesses that we have are having a rough go of it," she said. "We may lose our post office. Our store is struggling. Our cafe is struggling."

The lack of young people has her fearing the worst, she said. "Our community is going to die out if we don't get more people."

Liesl Eathington, an economist at Iowa State University's Community Indicators Program, suggests the trend of rural population decline in Iowa and nationally is not necessarily a bad thing.

"The natural tendency is for people to think of their community the way it was when they were growing up, so a lot of times people's standard for what is correct is in the past," Eathington said.

"Urbanization is a very natural tendency," she said. "People need assurance that just because their community is changing, doesn't mean it's disappearing."

SELLING TO THE WORLD

INCREASED EXPORTS COULD BOOST PROFITS BUT PUT FARMERS AT MERCY OF WORLD EVENTS

Twenty-six tons of toothlike white corn kernels rush out of an open doorway on the bottom of a metal bin that's planted on a slice of rolling farmland in Page County, southwest Iowa.

The flying grains get sucked into a cylindrical red auger, which pulls them against gravity into a semitrailer's open cargo hold, depositing them onto a growing mound that will be driven to a Mexican-owned plant 20 miles away. It is only the beginning of their journey.

This grain, grown on the Dammann family's farm, will be weighed and tested, cleaned and milled, packaged and shipped to restaurants and wholesalers across the United States and internationally. Cooks or assembly lines will hydrate the now-powdered kernels with water and bake them to become tortilla chips and wraps enjoyed by millions.

What starts on a farm in Iowa ends up on plates around the world. Like many other industries today, farming links the local and the global.

Increased globalization joins broad demographic and technological changes in reshaping — and unsettling — America. Easier movement of goods, services and workers across borders has improved the quality of life for people around the globe, experts say, but also has put the jobs of American workers in competition with lower-paid, increasingly well-educated workers overseas.

"All this is making us, to some degree, hypercompetitive," said Ernie Goss, an economist at Creighton University. "Unless you're cloistered, businesses are going to be facing this."

Global connectivity, with the help of technology, has transformed how and when companies do business, said Elliott Smith, executive director of the Iowa Business Council.

"Having a presence electronically seems to be the ticket to competition in many instances," Smith said. "Whereas it was downtime when the sun was down, now the sun is up somewhere."

In farming, many experts view increased exports as a golden opportunity to increase income for American producers and a critical piece in feeding the world's growing population.

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By Sharyn Jackson

Net U.S. farm income stood at \$92 billion in 2012, according to the U.S. Department of Agriculture's Census of Agriculture. Income per farm varies widely, largely based on size. The average was \$43,750 in 2012, up 29 percent from 2007.

"Exports truly are the future of profitability for farmers," said Julius Schaaf, past president of the U.S. Grains Council and a farmer in Fremont County, Ia. "We're just about filled for domestic demand, so the real opportunities are outside our borders."

But increased reliance on exports adds another layer of uncertainty and vulnerability to farming. Larger forces of policy, world events and weather synchronize before one little white tooth of a corn kernel becomes someone's dinner. It may be a drought in Brazil, turmoil in Ukraine or European bans on genetically engineered crops.

Decisions shaping farmers' destinies often take place far from the farm or dining room, in houses of parliament and company boardrooms, sometimes affected by attitudes farmers and researchers view as not based on science.

"The world is bigger than where we're at," said Bill Northey, Iowa's secretary of agriculture. "Political reasons or scientific reasons might not have to do with me, but might have to do with my prices."

Farmers learned that lesson during the farm crisis of the 1980s, caused in part by a U.S. embargo on grain exports to the Soviet Union, ordered in retaliation for that country's invasion of Afghanistan.

The sudden decrease in demand for grain, combined with skyrocketing interest rates and plummeting land values, sent American agriculture into a depression whose recovery required two decades.

CONSUMER ATTITUDES ALTER FARM DECISIONS

These days, add a new complication: More consumers at home and abroad are basing their food-buying decisions in part on how their food is grown.

Farmers markets, where consumers can interact directly with the growers of their food, have risen steadily in the United States from 1994 to 2014, almost quintupling to 8,268, according to the Agriculture Department.

Some consumers want meat to come from livestock raised in a way they view as humane, are skeptical that crops grown with genetically engineered seed are safe to eat, and believe the planet would be better off if everyone could buy food produced close to home rather than shipped from ever-bigger farms anywhere in the world.

An example of how attitudes abroad may over time affect how farms operate in Iowa: European resistance to American farmers' embrace of genetically engineered crops.

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Genetically modified seeds contain DNA that's been modified to express a trait such as resistance to a pest, an environmental condition or a chemical. Such seeds are planted in 27 countries and on 79 percent of the world's soybean acres and 70 percent of its cotton, according to the International Service for the Acquisition of Agri-biotech Applications, a group that promotes the use of such crops.

Seed giants like DuPont Pioneer and Monsanto promote the higher yields from their GM crops as linchpins in efforts to feed a hungry world.

After swine, corn is Iowa's second-largest agricultural export, and 95 percent of the corn growing in Iowa this year comes from genetically modified seeds.

Ruth MacDonald, a food science expert and professor at Iowa State University, stands by the safety of GM foods.

"There has never been a documented incident of any health consequence associated with consuming foods or food ingredients that are derived from genetically modified technologies, and there's a wide body of research that shows that they are not different nutritionally or functionally different from conventionally developed foods," she said.

But European countries have largely rejected GM products.

In 2013, only Spain among European countries made the list of the top 10 importers of Iowa corn, at No. 8. In the past decade, Japan, now at No. 2, experienced a more than 2,000 percent increase. Mexico remained at No. 1 and China, with its growing middle class, moved up the list from No. 33 to No. 4.

Schaaf, the past president of the U.S. Grains Council, is the president of MAIZALL, an alliance between Argentina, Brazil and U.S. corn growers that works to influence global trade issues. The group recently visited policymakers in the European Union in hopes of putting a face on the growers of GM corn.

"What we're trying to do is keep those markets open, and make sure we get our fair share of the growing pie," Schaaf said.

SOME FARMERS ADAPT TO SHIFTING ATTITUDES

But rather than try to change European policy, some American farmers are adapting to it.

The Mexican-based processing company where the Dammanns sent their corn will accept only non-GM corn this fall from the southwest Iowa growers it works with, said Scott Roberts, national procurement manager for Minsa Corp.

The company, with mills in Texas and Red Oak, Ia., aims to reach more European markets and the growing U.S. market for food not derived from genetically modified organisms.

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"The demand seems to be there," Roberts said. "The non-GMO, I think, is going to meet the sort of market out there that can't afford organic, but yet they still want to be able to see it on a label or know that it's non-GMO. We're just trying to get ahead of the market."

Minsa's directive for the coming crop this fall led the Dammanns to plant 2,400 of their 4,200 tillable acres in non-GM food-grade corn. (They still grow GM corn for ethanol, and their soybeans are also genetically modified.)

Growing non-GM corn after years of planting genetically modified strains is a challenge, especially the more finicky white corn, the Dammanns say. The yield is slightly lower, and they have to use a different cocktail of herbicide than usual, since non-GM corn isn't resistant to Roundup, the chemical used by conventional farmers to eradicate weeds.

Justin Dammann said it is not up to him to decide what people should eat, but the other way around.

"Food is very similar to fashion," he said. "It goes in cycles."

He doesn't care whether demand for non-GM food is founded in science or politics, or is just a fad.

"What was in yesterday is out, but we've got to keep up with all that, because we're raising what people want to buy and eat," he said.

CONSUMERS FORECAST TO HOLD MORE SWAY

Matt Russell, a chemical-free farmer in Lacona who sells directly to shoppers at the Downtown Farmers' Market in Des Moines, believes consumers will play larger parts in determining what farms grow.

Russell is coordinator of Buy Fresh, Buy Local, a project of Drake University's Agricultural Law Center that encourages Iowa consumers to choose farm-fresh foods at farmers markets or at the farms themselves.

Consumers' desire to know where their food comes from and a growing distrust of industrial agriculture will affect how large-scale farms will operate going forward, said Russell, who grows produce, free-range chicken and grass-fed beef on 110 acres.

The impact is already seen in the movement within the U.S. to label GM food, he said.

In January, for example, General Mills announced it would not use genetically modified ingredients in its original Cheerios brand.

"We now have an engaged public that is reconnecting and thinking about food, and so that opens up a whole political process and a market process that makes industrial agriculture more responsive," Russell said.

Harvest of Change

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"It's not replacing industrial agriculture with our farm. It's making big agriculture think differently, making them more accountable, making them more responsive to the environmental questions."