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Grim Reapers

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Mega-agriculture is destroying the Corn Belt and the Central Valley, which the country's food system depends on. Can midsize farms survive to save it?

Reviewed:

Perilous Bounty: The Looming Collapse of American Farming and How We Can Prevent It

by Tom Philpott

Bloomsbury, 246 pp., \$28.00; \$17.00 (paper)

The Farmer's Lawyer: The North Dakota Nine and the Fight to Save the Family Farm

by Sarah Vogel

Bloomsbury, 407 pp., \$28.00

We are eating a big hole in the middle of the Midwest and sucking up California's ancient aquifers until the land collapses like an empty juice box. The awe that new arrivals from other countries feel when they see the bounty in a US supermarket is an illusion—more like what one might experience when stepping from a cold night into a nice, warm house where they're burning the furniture. In short, we are plundering the natural sources of our food production and can't go on this way.

That's the thesis of Tom Philpott's *Perilous Bounty: The Looming Collapse of American Farming and How We Can Prevent It*. A crash awaits, while for the moment all may seem to be wonderful. The challenge of saying how much food our super-productive agriculture is producing leads him to use versions of the phrase "to churn out" eighteen times, by my count, in the book's 246 pages. We read that in 2010 "California farms churned out \$20.7 billion worth of fruits, vegetables, and nuts"; that California's Central Valley "churns out a quarter of the nation's food," though it occupies less than one percent of its farmland; and that despite the 2006–2012 global recession, "Corn Belt farmers churned out a succession of bumper crops." And so on, churning onward. How many ways are there to say "produces a huge amount of"? I sympathize with the author's dilemma. It's Big Agriculture's doing. A major challenge to the industry is that consumers in the United States can eat only so much—about 1,500 pounds of food per person per year. Investors, however, want more profit than a slowly growing population (less than half of one percent per year) can generate, so investment-driven agriculture overproduces, tries to get people to eat more, and constantly looks for new markets.

The Southeast has its hog and chicken factories, central Florida grows mountains of oranges, and fruit and vegetable megafarms line the Rio Grande Valley. Philpott leaves these aside and concentrates on the country's top two food-producing regions. Between them, the Central Valley and the Iowa-centered Corn Belt produce "the vast majority of food Americans eat," as well as food for export and corn for ethanol. (A third of the corn grown in the US is burned as fuel.) The Central Valley, about 450 miles long by about fifty miles wide, runs north–south between the Coast Ranges and the Sierra Nevada, and constitutes about half of California's cropland. The book begins with a melon farmer in the San Joaquin Valley, in the southern half of the Central Valley, who says his family may have to stop farming because of the costs of labor and water. This owner of a midsize farm competes with large corporate operations, many of which concentrate on nuts, a highly profitable crop whose labor costs are low once the groves have been planted and reach bearing age. Nuts need more water than melons, and operations that grow nuts have more money to pay for it. To grow a single almond requires about a gallon of water.

The almond groves that cover about a fifth of the San Joaquin Valley consume four times as much water as the city of Los Angeles. Having read up on healthy diet recommendations, I eat plenty of nuts myself, including almonds. Looking in the

pantry, I see I possess the almond-growing equivalent of a few dozen bathtubfuls of California water. I also receive benefits from a Teachers Insurance and Annuity Association of America fund. Philpott points out that TIAA owns a 40 percent stake in Treehouse California Almonds. Profitable but environmentally ruinous agriculture attracts investors like TIAA, the Harvard University endowment fund, and George Soros. The Farmland Index, which tracks the performance of agricultural investments, has outperformed the Standard & Poor's index 11.8 percent to 9.6 percent in recent decades. Millions of investors are participating in the despoliation.

As California's groundwater, an irreplaceable fossil resource, recedes, it becomes costlier to pump and gets more saline the farther down you go. Fortunately, pistachios, another profitable nut crop, can tolerate salty soil. (Is that why suddenly there seem to be more ads on TV for pistachios? The funny ads with the two marketers talking about pistachios with a tortoise?) The higher temperatures of climate change mean that farms that irrigate must now irrigate more. Snow piled up in the Sierra Nevada makes for good irrigation, with its usually gradual release into spring runoff. But the size of the Sierra Nevada snowpack shrank 20 percent between the Eighties and the Aughts. It is expected to go down as much as 60 percent more by 2050. The State of California's 2018 Climate Change Assessment predicted that in the future the snowpack will probably not exist at all below six thousand feet.

When irrigation water from snow and rain is scarce, farmers pump more groundwater. Pumping has caused the land to settle (a phenomenon called "subsidence"). Parts of the Central Valley had subsided nearly thirty feet by 1972 and have gone down more since then. When the ground sinks, cement-lined canals break, increasing the amount of mountain runoff they waste. Farmers then pump more groundwater. The land sinks more.

Almost all the almonds, pistachios, and walnuts we eat come from the Central Valley, as does 90 percent of the carrots, celery, garlic, broccoli, artichokes, grapes, plums, and tangerines. Each California vegetable or nut or piece of fruit we consume represents another "big swig of [the state's] increasingly scarce water supply," Philpott says. California also provides one fifth of the milk in the US, more than any other state. In this pushed-to-the-wall system, the state's food production is at risk, but nobody can say for sure when the groundwater will run out, because nobody knows how much there is. We know more about underground oil reserves than we do about underground water, but we do know that today wells must go deeper and the mineral-filled water that comes up is less usable. Meanwhile, parts of California have been subsiding at a rate of two feet every year.

The state gets most of its rainfall from weather originating in the South Pacific. The so-called pineapple express—a stream of incoming winter-season clouds bearing oceanic moisture—sometimes arrives extra-saturated. Climatologists say there have been five major episodes of flooding in California in the past eight hundred years, two of them in the nineteenth century. During the most recent, in 1861–1862, as much as six feet of rain fell in ten weeks in some places, and the tops of telegraph poles were underwater. The chances are good that a flood of that size will occur again, and soon; major California floods are predicted to occur every sixty-five years as the planet warms. (Whether the inundation ongoing as I write this will be among the monsters is not yet known.) The flood-soup of petroleum, chemicals, molds, sewage-borne diseases, and manure slurries that such an event would release is daunting to think about. A recent US Geological Survey study of the effects of a possible flood like the one of 1861–1862 concluded that it would do \$725 billion in damage, as opposed to the mere \$200 billion predicted for the state's next major earthquake.

At least California agriculture doesn't hugely damage an environment beyond its own. The Corn Belt, on the other hand, is a source of polluted agriculture runoff that sluices, via the Mississippi River, to the Gulf of Mexico, where the nitrogen and phosphorus fertilizer content incites algae blooms, which consume huge amounts of oxygen and create a marine dead zone the size of New Jersey.

In geographic configuration, the Corn Belt in no way resembles a belt. It looks more like a ninja throwing star, with its center almost entirely covering Iowa and Illinois and its points extending into Nebraska, South Dakota, North Dakota, Minnesota, and Wisconsin. Other states in the vicinity, like Indiana, Michigan, and Ohio, are also Corn Beltish, and have runoff problems like the Gulf's. In 2014 a toxic algae bloom caused by fertilizer runoff contaminated the Lake Erie water source for the city of Toledo, which temporarily lost its drinking water. Massiveness characterizes the Corn Belt. It is one and a half times the size of the state of California.

Traveling along two-lane roads in the Corn Belt, as I do occasionally, is like driving on an endless line in a color-field painting of only two colors. On the right there is the lush, John Deere green of corn; on the left, the subtler, dustier green of soybeans. Then the two sides switch, and soybeans are on the right, corn is on the left. Then for miles it's corn on both sides. Then, a surprise—soybeans on both sides! At gravel lots by grain elevators, hospital-white tank trucks full of ag-related chemicals have red triangular hazardous-materials signs on them. The fields smell sweet and powerful when you stop and breathe in, and you can almost forget that the truckloads of herbicides, pesticides, and fungicides are part of the ground, too, and that you're standing on what amounts to a factory floor.

The sense of peace is also wrong, as Philpott describes. In fact, the Corn Belt corn and soybean fields are a hot mess of the agricultural world, and their growth pattern is like a spasm or tantrum. More than 90 percent of Iowa is farmland, and the state gets thirty-five inches of rain a year. That's the fecundity you smell. "Corn as high as an elephant's eye by the Fourth of July" was what folks used to say, and maybe still do. Philpott notes that as a whole, the Corn Belt "generates more photosynthetic activity than any other spot on Earth during July, a 2014 NASA analysis of satellite imagery found."

Here the fossil resource that's being destroyed is soil. Before the arrival of European-style agriculture, Corn Belt topsoil lay sixteen inches thick, in a rich loam created by eons of growth and the grazing and trampling and wallowing of bison. Since the first plowing, the region has lost at least half its topsoil, which is disappearing now at sixteen times the rate of natural renewal. Fields wash out along gullies in the land's natural contours, farmers bulldoze more topsoil into the washed-out places, and the gullies wash out again. After one storm, Philpott says, "the roadside ditches were ecological crime scenes, heaped with mud." Iowa is losing 8.4 tons of topsoil per acre per year. During the rainy year of 2007, 4.2 million acres of southwest Iowa lost five tons of topsoil per acre in a single rainstorm.

Huge companies boss this region, as they rule American agriculture in general. They make the fertilizer that is applied in heavy amounts on its eventual journey to the Gulf, and the pesticides and weed killers (glyphosate, aka Roundup, is the main one), and the seeds genetically engineered to resist the pesticides and weed killers ("Roundup Ready" seeds), and the high-tech farm equipment that only its manufacturers can repair. Huge companies also buy and process and ship the grain; Cargill Inc., with its headquarters in Minneapolis, is the largest privately held company in the country. Among the grain traders, Cargill, Archer Daniels Midland, and Ingredion control 87 percent of the US corn market. ADM, Bunge, Cargill, and Ag Processing handle 85 percent of the soybeans. Other notable plunderers of topsoil and contributors to the Gulf dead zone include Bayer-Monsanto, Corteva Agriscience, Syngenta, Smithfield Foods, the Brazilian-owned meat-packer JBS, and Tyson Foods.

The accessibility of cheap feed makes it less expensive to raise pork in the US than in China. The US is now a place that injures its own environment raising meat for other countries. Smithfield, the world's biggest pork-packer, is Chinese-owned. Unwillingly, we may keep in mind the amount of hog excrement involved. The 23 million hogs in Iowa (about a third of the hogs in the US) along with Iowa's other livestock produce as much excrement every year as 168 million humans, or the "fecal equivalent" of the world's eleven biggest cities. All that corn and soy, run through all those hogs (an average hog gains about 250 pounds in the six months between birth and slaughter), gives Iowa the "highest fecal-equivalent density of any state"—a superlative too long to fit on a license plate, which is just as well.

The farmers themselves don't see much of the money; the government keeps them afloat with subsidies. Nor, regrettably, can they claim to feed the world's hungry. The food they grow that is exported goes mostly to other wealthy countries, while the nineteen hungriest countries in the world receive only 0.5 percent of US agricultural exports. US food aid to those countries brings the total to only about 2 percent of their food supply.

Meanwhile, for the executives of and investors in Big Agriculture, the money is as huge as everything else about their enterprise. Investors in Monsanto saw a fourteenfold return when the German company Bayer recently bought it. Agribusiness spends \$100 million on lobbying in Washington per every two-year federal election cycle—less than the financial and health care sectors, but more than defense. Thirty-seven percent of Americans eat at least one fast-food meal every day, and about half of us have a chronic disease related to bad diet—mainly obesity-derived conditions such as diabetes and heart disease. Fast food relies on Corn Belt corn and soybeans, in their various transformations into meat, corn syrup, fats, and additives. As Philpott says:

The main beneficiaries [of this system] are a set of interlocking, enormous corporations, each generating billions of dollars for shareholders and delivering in exchange a mountain of health-ruining food.

One could wish, after this chronicle of dysfunction, that the “How We Can Prevent It” part of the book, which takes up about the last third of it, were more persuasive. I came away thinking that we probably *can't* prevent further ecological ruin and the eventual destruction of our food-producing systems. In California the Sustainable Groundwater Management Act, passed by the state legislature in 2014, required that certain districts limit groundwater pumping as of 2020. That law means “draconian cuts in irrigation,” which will favor rich nut growers over vegetable farmers, who can't pay as much for water. In the Corn Belt, the answer might be crop diversification, with nitrogen-fixing plants like clover and alfalfa that would reduce the need for fertilizer and hold the soil in place over the winter. Added to the corn-soybean combination, these cover crops would also make the fields less vulnerable to rainstorms; at the moment, the fields are bare from November until they are replanted and start to green up in the spring.

Monoculture, in the end, is the problem. Or duoculture: when the region went to all corn and soybeans all the time, back in the 1970s, the topsoil loss began to accelerate and the Gulf's hypoxic dead zone to grow. Diversely planted fields, livestock kept on the farms (rather than clustered noxiously in feedlots) to graze down the cover crops and fertilize the soil, and more midsize farms instead of mega-operations dictated to by plundering behemoths like Monsanto and Cargill—all these changes might get Corn Belt agriculture out of the destructive mode it's in. But midsize farms have by far the hardest time staying in business. If there were more of them, and more diversified farming practices, that would also require more hands-on work, i.e., more farmers. And if there's anything America has been ridding itself of for years, it's farmers.

In 1935, when there were about 127 million Americans, there were six million farms. By 2017 the population had gone up to 325 million, and the number of farms had gone down to two million. Four million had shut down in the space of a single lifetime; many millions of farmers lost their farms. In 1940 the population of Greene County, Iowa, in the center of the Corn Belt, was 16,599. It had fallen to about half that by 2020.

Philpott does not say how consolidation of agriculture took place in the Midwest, or what happened to the former owners of the ecologically less harmful midsize farms. In *The Farmer's Lawyer: The North Dakota Nine and the Fight to Save the Family Farm*, Sarah Vogel—a North Dakota attorney who won a class-action lawsuit in 1983 that saved 240,000 farmers across the country from immediate foreclosure—tells a story that concentrates on hard-pressed families trying to stay on their farms. Philpott's book is about the trashing of the environment. Vogel's is about the discarding of people.

The drama she describes is not centered in the Corn Belt. Vogel's original clients were mostly wheat farmers and stock ranchers from other parts of North Dakota. The entire thrust of her mission—and it was a mission, an ordeal of faith sustained through suffering—followed the example and inspiration of a now-vanished North Dakota-based socialist-populist party called the Nonpartisan League (NPL). In the 1910s farmers in that state who were being cheated by the railroads and the grain traders in Minneapolis–St. Paul banded together against them, and against threats of bank foreclosures, by forming the NPL. Then in 1932 the party's William “Wild Bill” Langer was elected governor, and in 1933 he declared a moratorium on farm foreclosures in the state. Vogel's grandfather served as Langer's campaign manager. Her father, Robert Vogel, was said to be the leading trial lawyer in the state.

Even with that tradition behind her, and those North Dakota connections, she struggled. The case reduced her to homelessness, poverty, indebtedness, and weeping on the grimy floor of her small, rented office when, in October 1982, her phone was turned off—the last straw. After Ronald Reagan was elected in 1980, a crunch came down on farmers delinquent in their loans from a US Department of Agriculture agency called the Farmers Home Administration. (Its acronym was FmHA, to distinguish it from FHA, the Federal Housing Administration.) Reagan set out to dismantle New Deal-era institutions like the FmHA as part of a budget-trimming demonstration preparatory to reducing income-tax rates on the wealthy.

During the Depression, a principal goal of the Resettlement Administration—precursor to the FmHA—was to keep farmers on their farms. To this end it successfully loaned them hundreds of millions of dollars. In 1936 President Franklin Roosevelt made a speech titled “The American Farmer Living on His Own Land Remains Our Ideal of Self-Reliance and of Spiritual Balance.” This could be said to sum up the FmHA's founding philosophy. Given the fluctuations in commodity prices, New Deal price-support programs tried to reach parity—that is, they tried to make sure that farmers weren't paid less for their crops and

livestock than it cost to produce them. A whole different state-owned enterprise, the Commodity Credit Corporation, offered price-support loans to farmers for the purpose of creating parity.

Big Agriculture did not like parity, called it “socialist,” lobbied against it, and gradually got it weakened. The farm population, finding it generally harder to make a living, declined by 30 percent between 1950 and 1960, and by another 26 percent in the next decade. When parity was phased out, FmHA loans became available again to take up the slack. After the Reagan team arrived, loans disbursed by Democratic administrations were called in, suddenly and remorselessly, by Republicans.

David Stockman, Reagan’s thirty-five-year-old director of the Office of Management and Budget, believed that FmHA and other government programs were “organized larceny” and that labor and capital “trapped” in inefficient farms should be “freed” by selling the property and shooing the farmers off it and out to somewhere else in the economy. In August 1981, at his direction, the head of the FmHA issued the infamous Administrative Notice 580, which set “delinquency goals”—quotas for FmHA loan foreclosures to be met by March 31 of the following year.

March was a terrible time for such a deadline. By then, no new crops would have had time to grow. Vogel writes, “In my opinion, AN 580 triggered the ’80s farm crisis in the same way the stock market crash in 1929 triggered the Great Depression.” Farmers looking for cash to repay their loans tried to sell land whose value had previously been high, until too many people took that route, flooding the market and causing land values to plummet, thus causing more desperation, etc.

With a law degree from NYU, Vogel had been working for the Federal Trade Commission and then the Treasury Department in Washington. She moved back to North Dakota in 1981. An ex-boyfriend in the process of losing his farm to the FmHA was traveling around the country scamming people who were in similar straits and raising money for his bogus “Farmers and Ranchers Protective League.” Among the bona fides he gave the scam-ees was her phone number; her name got out as a lawyer who could help, and unlike the ex she actually tried to. Soon dozens of farmers were getting in touch with her. Hard-up clients gave her vegetables, homemade preserves, frozen fish. None could pay much money. Soon the house she had bought in Bismarck and furnished with folding chairs was foreclosed on. A farmer couple who came to her office one morning hesitated outside when they heard her crying. Eventually she got off the floor and let them in.

On March 11, 1983, Vogel filed her class action, *Coleman v. Block*, in the federal court of the Southwest Judicial District, in Bismarck. Dwight Coleman was a farmer from near the Canadian border who had lost his cows and calves in a barn fire and his wheat crop in a snowstorm. Ignoring the FmHA’s own rules about leniency in circumstances beyond the farmer’s control, the agency had foreclosed on him. Coleman was joined by eight other named plaintiffs, all with similar stories, and about eight thousand more farm families, versus John “Auction” Block, the Reagan-appointed secretary of agriculture. Block got his nickname because of the FmHA’s new enthusiasm for liquidating farms.

At the time of the suit, Vogel, a thirty-seven-year-old single mother, was living in her parents’ basement. Lawyers for the defense were from the US Attorney’s Office for the state of North Dakota and from the Washington office of the US Department of Justice (“the nation’s biggest law firm,” as she says). Luckily, she had some help as well. The national office of the ACLU heard about the case and their legal director joined her team, along with a young lawyer from Philadelphia who had won a class-action suit on behalf of victims of the Three Mile Island nuclear plant disaster. There were other important allies, including her father, who gave advice based on his lifetime in North Dakota courtrooms.

Hell and chaos were stepping on their heels. Farm rage had reached such a point that some of the debtors she met with asked her, in all apparent seriousness, if it would be legal for them to shoot officials of the FmHA. A rural movement known as the Posse Comitatus had stirred up armed protesters and tax resisters who were carrying weapons and having actual shootouts with police. I was living in the woods in Montana in 1983, and neighbors told me to be on the lookout for Posse Comitatus guys training in the farther boondocks. Once I took my sister-in-law up a logging road on a mountain to see the view, and at a turnaround near the top, men in camo were firing bursts from automatic rifles into a cliff face. Near Medina, North Dakota, in February 1983, a Posse Comitatus member named Gordon Kahl shot his way through a roadblock, killing two US marshals and wounding four other officers. He was still on the run during hearings for the *Coleman* trial. Courthouse security was tight. Vogel saw her lawsuit as offering rural families some hope that the legal system cared about them.

Her argument centered on a 1978 act of Congress that gave FmHA borrowers the right of deferral and review before foreclosure, and on a case involving the too-hasty stripping of benefits from a welfare recipient. The FmHA countered, in

essence, that her clients were bad farmers; its lawyers made many contemptuous and ad hominem claims that she disproved. They had no real answer to her deeply researched contention that the agency had violated its own legal obligations to borrowers. In October 1983 the judge not only issued a temporary injunction against all FmHA foreclosures, he ruled in favor of her petition to make the suit a national class action on behalf of about 240,000 FmHA borrowers. This temporarily stopped foreclosures against all holders of FmHA loans, 52 percent of whom had been delinquent as of January 1, 1983. The news spread joy through the land. She was the farmers' lawyer and hero.

The *Coleman* victory created public awareness of what farmers were going through. A feature film about the foreclosure crisis, *Country*, came out in 1984. Coproduced by Jessica Lange, who also starred in it (with Sam Shepard, her then husband), it helped turn people's opinions in favor of the farmers and against the FmHA; Ronald Reagan called it "blatant propaganda." As part of the movie's optimistic ending, words on the screen just before the credits summarized the farmers' vindication in *Coleman*. Willie Nelson held his first Farm Aid concert in 1985, building yet more support. Vogel's reputation continued to rise. In 1988 she was elected agricultural commissioner of North Dakota, a powerful position in the state, where she served until 1997. No woman had ever held that post in any state before. Today she is in private practice in Bismarck, representing farmers and Native Americans.

She agrees with Philpott on the importance of midsize farms to saving the environment and improving the general moral and spiritual tone of the nation, as per FDR. *Perilous Bounty* came out in 2020, Vogel's book in 2021. At the end of *The Farmer's Lawyer*, she even quotes Philpott: "Finding economic models that allow midsize producers to thrive is crucial to the needed transformation of our food system." She puts this sentence in italics.

Midsize farms offer the advantage of flexibility in crop selection and adapting it to the local terrain. Mixing rye and clover and alfalfa into the Corn Belt's duoculture would add nitrogen to the soil and hold it over the winter. Growing fruits and vegetables in Iowa and selling them in Chicago and other big midwestern cities would cut transportation costs from California and reduce the drawdown of its water. Including livestock on midsize Corn Belt farms would decrease the need for fertilizer and obviate the feedlots.

But the problem is that midsize farms are too small to compete with megafarms in volume and price and too big to be supported by the farmers' outside income and the profits made in local, smaller markets. At the beginning of her book, Vogel says the midsize farm is in danger of going extinct, and at the end she concedes, "In today's economy [midsize farms] wouldn't have a prayer." Counting on midsize farms to save agriculture and the environment seems a long, long shot, for now.

My friend Tim White owns a small farm in southern Ohio. During the farm crisis in the 1980s he lived in Iowa and wrote for *Successful Farming* magazine, and he remembers the white crosses put up beside the town-limits signs in communities across Iowa; the crosses were for farms that had gone out of business, though some also stood for farmers who had committed suicide. I asked him if that kind of misery is at large in farm country today. He said that the usual subsidies and the special payments made in compensation for losses caused by the Trump trade war with China seem to have had a morale-building effect. Iowa and North Dakota and nearly the entire swath of states across the north-south middle of the country voted for Reagan twice and Trump twice, despite the disruptions caused by both to the farm economy.

Then Tim and I talked about the gigantic Corn Belt fields and how GPS-guided planting and genetic modification enable farmers to fit 35,000 corn plants in a single acre. Thirty-five thousand seven-foot-high plants in one acre! To my suggestion that this was kind of scary—along the lines of Michael Pollan's speculation, in *The Omnivore's Dilemma*, that we are the victims of a plot on the part of corn to subdue human beings and take over the world—he said, "Well, maybe. But you gotta admire the productivity."