

farmers get fracked



by tracy frisch

S

LOPE FARM, IN THE DELAWARE COUNTY

town of Meredith, has become one of the major producers of pasture-raised and finished beef for the metropolitan New York markets. But if fracking comes to the area, farmer Ken Jaffe says he's "basically out of business."

His biggest customer—Park Slope Coop, in his old Brooklyn neighborhood—buys 40 percent of his meat (one cow a week). The store, owned by its 15,800 working members, spends millions of dollars each year on foods from New York farms. But in light of the environmental contamination resulting from this type of natural gas extraction, the coop said, in an open letter to the governor and state legislature, that if fracking came to New York, it would have to stop sourcing agricultural products grown in the areas affected.

Jill Wiener, a cut-flower grower on the board of the Catskill farm support group Farmhearts, approves of this precautionary rejection. "You can buy from an organic farmer who's never going to lease their gas rights, but you don't know what their neighbors are doing."

"You would be taking an agricultural district and turning it into an industrial zone and you just can't get good, clean, wholesome food in the middle of an industrial zone," Wiener says. "I wouldn't want to eat a carrot grown in gaslands and I wouldn't want to feed it to anyone else, either."

Jaffe, too, finds it reasonable for consumers to want to avoid such food as suspect. No special testing is conducted on animals, crops or food products that could have been exposed to fracking chemicals and other hazardous—even radioactive—substances that find their way into surface and ground water as a result of fracking. “You’re dealing with some of the most powerful carcinogens known to man, like benzene, toluene and xylene, which are illegal in drinking water over one part per billion,” says Jaffe, who practiced medicine as a family physician for 25 years and studied epidemiology before switching careers. “If they say fracking fluid is 99 percent water, that one percent is equivalent to ten million parts per billion.”

Fracking creates abundant opportunities for spills of tainted water. Wells must be fracked periodically to stimulate production. While most of this water remains underground—“like unexploded ordinance” in the words of one fracking opponent—the immense quantities that do return to the surface end up in evaporating ponds or is trucked away for disposal elsewhere, including municipal sewage plants (which are unequipped to detoxify such toxic soups).

Livestock are attracted to this salty wastewater, one reason they are particularly vulnerable to being poisoned by fracking. When 19 cattle died from such a spill in Louisiana, necropsies showed that their deaths were caused by ingesting hydrocarbons. Farmers in Pennsylvania—whose regulators gave Marcellus Shale fracking a couple of years’ head start over New York and where dozens of household water wells have already been rendered unsafe—have made numerous reports of illness and multiple deaths in livestock, typically without any follow-up investigation. According to Jaffe, the state did quarantine 28 cattle but didn’t run the appropriate tests to find what likely sickened them.

Natural gas production also causes ground-level ozone, which “kills adults with respiratory conditions and puts children with asthma in the hospital,” Jaffe says. Besides the human toll, ozone also is responsible for more crop damage and reduces yields more than all the other major air pollutants combined, according to the mainstream agricultural literature. (Ozone belongs in the upper reaches of the earth’s atmosphere, where it protects humans and

A fracking primer

The Marcellus Shale was formed over 350 million years ago by the compression of layers of organic sediment under enormous force. This geological layer occurs more than a mile and a half below the surface. It encompasses large swaths of West Virginia, Ohio, Pennsylvania and New York, where it covers the Southern Tier and the Catskills and some area beyond. In January 2008, two geology professors calculated that up to 500 trillion cubic feet of gas was locked up within shale rock under the region.

The consensus holds that only a tiny fraction—at most around 10 percent—of this shale gas could be recovered with today’s very costly, high-tech, chemically intensive drilling methods. Conventional gas fields contain pools of natural gas that can be tapped into with a well, similar to drilling for water. Rather than being concentrated in reservoirs, shale gas is scattered within pores or fractures or tightly bound to organic matter throughout the shale rock itself. Extracting it requires complex technology and is not cheap.

Hydraulic fracking forces a slurry of water, sand and chemicals called fracking fluid into the well bore under tremendous pressure. It pries open and stabilizes small fractures in the shale and helps dissolve and shake loose some of the trapped natural gas. Each time a well is fracked (at least several times in the lifetime of a producing well), between 1.5 million and 9 million gallons of water are used.

What’s in fracking fluid is the \$64 million question. The “Haliburton loophole” in the federal Energy Policy Act of 2005 exempts the gas industry from disclosing the array of toxic ingredients as proprietary information. Almost 600 of these secret substances have been identified by dogged investigators, but the industry refuses to divulge a complete list, and neither a property owner (nor a physician) get to

find out the contents of the mixture used in a particular well.

The drilling process itself brings up various hazardous substances that naturally occur but were previously safely out of reach thousands of feet below the surface. These include radioactive materials as well as minerals that break down into corrosive compounds like sulfuric acid and liberate high concentrations of arsenic, chromium, cadmium, lead, mercury and other heavy metals. As much as 80 percent of the fracking fluid stays underground, never to be recovered. Some of it migrates into aquifers and drinking water wells, possibly through some of the very fissures caused by the fracking process.

Drilling supporters stress the fact that natural gas produces about half the amount of carbon dioxide as coal when it is burned for energy. But a new study by Cornell professor Robert Howarth found that so much methane escapes during gas extraction, processing and distribution that shale gas may have up to a 20 to 100 percent *larger* carbon footprint than coal. Methane is a far more potent greenhouse gas than carbon dioxide.

Drawing in part from internal industry communications, a June 2011 *New York Times* series presents evidence that the gas industry has grossly inflated its reports on the promise and output of shale gas reserves in order to attract investors. One retired oil and gas geologist called it “an Enron moment.”

The frenzy is not limited to this country, either. Shale gas formations are being explored around the world. So far Quebec and France have banned fracking for now.

The Marcellus Shale is just one among at least 25 shale gas formations in 34 states. Much of the Hudson Valley sits atop the Utica shale, a deeper, but nonetheless likely, future target for drillers.

—TF

other living organisms from the ravages of excessive ultraviolet radiation from the sun.)

Of more than 90 species of agricultural crops known to be affected by ozone, clover, which is critical to livestock nutrition and pasture health, is one of the most sensitive. Like other legumes, it takes nitrogen from the air and fixes it in the soil.

The magnitude of natural gas-induced ozone levels is astounding. Internal combustion engines have long been considered the biggest source of this pollutant, but an atmospheric study in Fort Worth, Texas, showed that hydrofracking there causes as much surface-level ozone as cars and trucks driving in the city. In a sparsely populated Wyoming county with one-fortieth fewer people per square mile than the Catskills, ozone readings at the ground surpass those in traffic-congested Los Angeles. Curiously, Chautauqua County, in far western New York, has 6,000 gas wells, the most in the state, as well as the second-highest ozone levels, Jaffe says.

Jaffe's vision of rural economic development doesn't threaten health or our capacity to feed ourselves. In the Meredith Landowner Coalition newsletter, he makes the case that utilizing only half his town's unused fields for pasturing livestock would conservatively increase farm revenues by over \$4 million, year after year without even factoring in direct marketing. It would put a lot of money back into the local economy, too—Jaffe figures that for every acre he farms, he spends \$3,000 a year locally to pay the meat processor, trucker, cow-calf producers, and for hay and labor.

In early July, New York State released its draft environmental impact statement on fracking, a major step toward approving and regulating it in the Marcellus Shale. Acknowledging that the hydrofracking process has polluted wells and contaminated surface water, the report proposes to ban the gas extraction process in the parts of the Catskills located within the New York City watershed (in order to safeguard the city's water supply that flows, unfiltered, from its Catskills reservoirs). The state also would protect the groundwater supplies of some upstate cities and the unfiltered surface water reservoir used by Syracuse.

For those drinking unfiltered water in the 85 percent of the Marcellus Shale where the state is giving fracking a green light, the report offers little consolation. Jaffe calculated that of the 1,140,000 upstate residents who drink groundwater in the Marcellus Shale, the state would not protect the drinking water of 840,000.

Callicoon Center resident Bruce Ferguson succinctly expresses the outrage over this unequal protection. "They make a case against fracking. That's why they exclude public drinking water supplies and some principle aquifers," he says. "But that doesn't protect the rest of us—we don't have enough political clout to be protected. We're supposed to be sacrificial energy colonies. Our drinking water is unfiltered, too."

Ferguson channels his concerns into action by working with Farmhearts, while devoting himself to stopping fracking through Catskill Citizens for Safe Energy. Fracking came along, "just as many elements are dropping into place for small scale, sustainable, farm-to-table farms [and] young people are clamoring to get into farming." His prediction: "Every aspect of our local economy will be wasted by hydrofracking."

"Farms can become prosperous again. Old dairy country is on the cusp of a farm renaissance," says Ferguson, who sees the billions of dollars in New York City's unmet needs that the foodshed could supply. Yet, the depressed circumstance of many current and retired farmers feeds directly into the leasing mania. "We have farmers with a mountain of debt. Either their children are leaving—or their



children want the farm, which is even more frightening," Ferguson says.

That dairy farmers "lose money every time they milk a cow" is a structural problem Ferguson attributes to crooked milk pricing, one-size-fits-all regulations more appropriate to factory farms and the fact that imported milk protein solids are allowed to displace domestic milk in cheese factories. ("Did you know we are a dairy deficient nation?" he asks.) The simple eloquence of the dairy farmer from whom Ferguson legally buys raw milk communicates the dire dilemma. "One day this dairyman, who comes from a long line of farmers, says of the gas companies, 'I hope they don't ask me to lease my land because if they did, I would have to say yes.'"

Burr Hubbell lives in Dutchess County, but he was raised on a Margaretville dairy farm in its final years. In the early 1960s, there had been exploratory drilling in that area—gas was found, but the technology to recover it was unavailable, he says. "There was the sense growing up that if they could just exploit it, we could all get rich. Now we're all scared to death. We had thought it would be easy money and there would be no downside." His family's farm has a spring that serves three households plus the farm.

"There's no process for cleaning up an underground aquifer" contaminated from fracking fluid, he stresses.

As dairy farmers in a line of six generations to farm on the same land in Sullivan County, the Diehls are survivors. "No one goes into a business that's not profitable unless they consider it their culture that they're perpetuating," explains Alice Diehl, a feisty woman with a deep commitment to the continuance of this heritage.

At Diehl Homestead Farm, one of only 27 dairy farms remaining in Sullivan County, grandson Dan, 16, was the first in the family to sound the alarm about hydrofracking. He owns 16 milk cows, mainly Brown Swiss, and plans for a future on the farm. "He says, 'Grandma, I'm worried that it's going to mess up the water and how it would ruin everything,'" Alice recounts proudly.

The family has always adapted to changing circumstances. "It's just been a matter of being a chameleon," she says. In 1906, the family ran a boarding house in Alice and Peter Diehl's present home. Now, in addition to doing maple syrup and honey, they are exploring micro-dairy processing, spurred by the success of the buy-local movement.

While Adam, the youngest son, is the farm's herdsman, the two oldest boys had to leave the farm and go into construction because the 70-cow dairy farm didn't have the income to absorb them. Until now, the family hadn't been weighted down with much debt, but lately, they've been "sliding backward, not moving forward," Alice says. Nonetheless, in their town they are among the very few holdouts that won't sign a gas lease. "The money doesn't matter if you're not happy and it destroys your land," she asserts. "To allow something that no one can guarantee is safe would be irresponsible. We're not leasing our land to anyone for anything. That's not what the history of this farm was about."

For her, the chosen strategy for saving agriculture involves strengthening the economic status of family dairy farms. She participates in a new national organization of dairy farmers working to reform dairy pricing. Locally, she and a handful of other farmwomen—including a neighbor whose dairy became solar-powered in 2009—formed a local support group to facilitate economic opportunities for fellow farmers.

Being a family farm defender and an outspoken critic of hydrofracking has engendered a lot of animosity from people she grew up with who are "convinced that drilling is the way to go," she says, "They have a right to do whatever they want, but not if it affects my property and not at the cost of other people around them." Within her extended family, too, the leasing issue has also become "an elephant in the room" that strains close relationships. "It behooves the gas companies to breed dissent," she says. "These people have come in and promised the moon and not given the real facts."

Greg Swartz and Tannis Kowlachuk first heard of hydrofracking in early 2008, six months after they purchased the 12-acre parcel they call Willow Wisp Organic Farm which now provides their livelihood. Then

they found out that their immediate neighbor, the retired dairy farmer who sold them the land, had signed a gas lease for his remaining acreage.

A map of the drilling unit revealed even worse news. For several square miles around them, every single piece of land but theirs has been leased, as had 85 percent of the area in their township of Damascus, Pennsylvania, just across the Delaware River from Sullivan County, New York.

Since these discoveries, they've done just about everything they could—researching, organizing, going to meetings, giving testimony and joining in legal action "to try to at least slow it down," Swartz says. "It's taken a huge part of our life."

Much about hydrofracking frightens them. Besides an obvious surface spill, Swartz says the panoply of "unknown and invisible" effects troubles them. The effects of injecting millions of gallons of water containing toxic chemicals into the ground don't necessarily occur right away, he points out. "Our business is based on our guarantee to our customers that we are growing safe, healthy food," says Swartz, who left his job as the executive director for Northeast Organic Farming Association of New York to farm.

Almost two years ago, the couple confronted their options and decided to stay put and "go for it." That meant continuing to make capital improvements on the farm. They have spent "in the six figures" on infrastructure. "Where we are today is ten years in the making," he notes. It would be a serious blow to walk away from all they had invested in the soil and business, creating good markets (all within 60 miles of the farm, including a year-round CSA) and forming community.

"If fracking comes here and we're not comfortable with what's happening, we'll try to sell our house and land in order to start again somewhere else," Swartz says. Realistically, they think they would only recoup half the farm's value, enough to wipe out their debt.

Short-term, they've had a reprieve. Public opposition in the form of 36,000 comments forced the Delaware River Basin Commission, established to protect the river, to back down and temporarily block drilling. The commission is scheduled to issue its draft drilling regulations in September. In the interim, it has allowed 14 existing test wells, but with no fracking or horizontal drilling.

One of those test wells was drilled a little over 600 yards from Willow Wisp Farm, giving Swartz and Kowlachuk a taste of what may lie ahead. The couple remembers the date they first saw the drilling rig rise above the tree line because on July 18, 2010, they were celebrating their son's second birthday. During the prior six weeks they heard the constant din of construction. When drilling began in early August, Swartz says, "We could hear diesel generators, clanking pipes and equipment all the time. For some reason it sounded louder at night." For the entire four-month operation the site was illuminated all night. Then there was the truck traffic.

Such disruption would only be the beginning. Gas giant Chesapeake Energy's build-out plan puts a five-acre well pad every square mile to service 8 to 12 wells. They require

bulldozers to clear forest and level terrain for the drilling pad, for access roads, pipelines compressor stations and impoundment ponds to store chemical-laden wastewater.

On the Sunday before Labor Day, the couple smelled a chemical sulfur odor and reported it to the Pennsylvania emergency response line. The answering service promised to page the appropriate person and call them back within 15 minutes, but did not. A half hour later, Swartz called 911. The fire chief (who has a gas lease) demanded security personnel let him enter the well site. He confirmed the odor was coming from a wastewater pond, but counseled Swartz not to worry.

After making his way up the hierarchy to the deputy secretary for the environment, Swartz insisted on an immediate inspection, a water test of the wastewater pond, and air monitoring. He did not receive satisfaction. A two-page inspection report says everything was fine. Test results came back from a water sample taken weeks before they complained about the odor. And no air tests were done because the state says its three mobile air-monitoring units were deployed elsewhere.

"That blows a hole in the argument that it's a highly regulated activity and the state is equipped to handle it—and, of course, there have been plenty of blow-outs and fires," Swartz concludes.

The wastewater was later trucked away, and the company moved the drilling rig ten miles south to the edge of a Delaware River tributary, Calkins Creek in Milanville, the home of filmmaker Josh Fox, who made *Gasland*, the Academy Award-nominated documentary on the subject.

Wineries are emblematic of the value-added niche central to reviving agriculture. In the town of Hancock, where much of the land is under lease to gas companies, Jennifer Clark and Andrew Scott run Eminence Road Farm Winery along natural principles. Hydrofracking is not one of their accepted practices.

"We are dependent on our fresh spring water to clean our equipment," Clark explains. The couple doesn't use any soaps, detergents or chlorines for cleaning and the only thing they add during the winemaking process is a small amount of sulfites just prior to bottling. They encourage natural yeasts to colonize their facility to aid the fermentation process. In place of artificial climate control, they open up the ends of the barn so the good mountain air they currently enjoy will flow through.

Even if they were spared the threat of gas wells in their immediate vicinity, the exhaust from the heavy diesel truck traffic and other air pollution associated with fracking could be ruinous. A Texas study clocked an average of 592 truck trips per shale gas well, with loaded trucks weighing in at up to 80,000 pounds.

If gas companies are permitted to frack, Clark, who is president of the Sullivan County Farmers Market Association, predicts a severe downturn for local agriculture overall. And when the farm base shrinks, the demand for essential agricultural support services also declines. The loss of businesses such as tractor dealers and large animal vets becomes inevitable, making it harder for anyone to farm.

"With less farms, farmers' markets will not be as vigorous. Tourists won't come and second homeowners will leave," she says. Given its remote location, their small winery depends on farmers market sales, and with some of their customer base gone, they would personally take a hit as well.

Vegetable growers like Neil and Alice Fitzgerald also worry that fracking will be the demise of their farm. The couple has farmed organically along the bank of the Delaware River, south of the New York City watershed, for 18 years. River Brook Farm in Cochection is located a half-mile from a test well.

"My concern is that they're going to put me out of



Andrew Scott & Jennifer Clark

business. I use the river to irrigate during droughts. If they drill in the Delaware River Basin, they'll eventually pollute the river—it's just a matter of time," Neil Fitzgerald says. "The Hudson River shows up on cancer maps. This is the river that isn't yet polluted."

While River Brook Farm produces the full-spectrum of vegetables "from asparagus to zucchini," its specialty is leafy greens of many varieties. "Of course, greens take up everything in the soil," Fitzgerald explains. "Lettuce is very good at taking up toxics in soil, but you would grow it and send it to the dump. So we can't put dirty water on our crops."

"We get an awful lot of the New York art crowd. They either have summer homes or have retired here," he says. But if drilling proceeds, he warns, "People from New York City won't come here to summer."

Fitzgerald, who is 66, used to be a board member of Sullivan County Farm Bureau but he resigned in protest

when the general consensus conflicted with his concern for agriculture. "Everyone on the board was talking drill, drill, drill. One of them said, 'If it ruins my land, I'll just move to Florida.' We figured the farm would be the means for our retirement," he says. Now he's not so sure.

Some towns, like the three that ring Otsego Lake, are in the process of passing laws banning hydrofracking. His town board is staying neutral for fear of being sued by the gas companies. Says Fitzgerald, "The board is not protecting the value of our land. I feel they're selling us out."

Gas leasing destroys property values in other ways. "Wells Fargo will not give you a mortgage on a house that has a gas lease on the property," says Hubbell, an attorney who has done a lot of real estate transactions in Delaware County. "The mortgage industry doesn't want to get stuck owning a property that's not really collateral for them. If that becomes an industry standard, you combine the bad housing market with the inability to get a mortgage."

One of the largest producers of organic vegetables in our region, Richard Giles of Hamden, says he speaks about fracking "as a privileged, protected farmer" because Lucky

watershed near us, it's always 'local versus outsider,' 'farmer versus tree hugger,' 'conventional versus organic,'" he says. He sees those divisions as obstacles to solving problems.

So, though Giles is saddened that many farmers embrace gas leasing as their salvation, he says he can't blame them. "I feel great camaraderie with my farm neighbors because I have farmed all my life. I understand the desire to have freedom, to take the windfall, but it's not wise. A woman came up to me at a market. She says, 'We had a small house. We sold the lease. Now we can sort of retire.' I don't want to deny them that."

As a farmer in the path of oil drilling in the deep South's "black belt" (named for the deep, rich soil), Giles has already experienced the devastation wrought by fossil fuel extraction. There, farmers took the lease money and cashed out, abandoning their land. He fears a replay of the same destructive social dynamics here, to the serious detriment of the vision of a local food system supplied by the small farms he advocates. He and his wife, Holly White, live out their belief that a local food system is possible. Much of their almost 60 acres of food crops go to

nourish their CSA member and their customers at Greenmarket and local farmers markets. Another substantial portion goes to Angello's Distributing.

"What I saw in the South were communities that had an agricultural base—they were depressed but still functioning. With oil, the large landowners would get enormously wealthy. If you've got 500 acres and lease the mineral rights, you can live for the rest of your life," he says. "But if you have an eighth of an acre and a house,

you get nothing. If you're driving a tractor and a cotton picker, you lose your job, too. You lose the community center and the employment. The whole community corrodes. Look at where the energy resources are and there's where you'll find poverty. Why is that?"

Anthony Ingraffea, a nationally recognized Cornell University engineering professor with a specialty in fracture mechanics, concurs that fracking will not make New Yorkers rich. According to him, fewer than 2 percent of landowners in the state's Marcellus Shale would benefit financially from hydrofracking. ❖

A farmer who has organized landowners to get better gas leases in his Catskill Mountains community declined requests for an interview for this article—he didn't want to alienate his farmers' market customers, he said, adding that the topic should be dealt with as a business issue, not on an "emotional" basis.

Look at where the energy resources are and there's where you'll find poverty. Why is that?

Dog Farm is in the New York City Watershed. The farm also has a conservation easement through the Watershed Agricultural Council.

The Delaware County farm wholesales much of its almost 60 acres of food crops to Angello's Distributing, an organic distribution company in Clermont, and other outlets, besides operating a CSA and selling at Greenmarket and smaller farmers' markets.

Still, he doesn't feel immune from the impacts of fracking. Just across the Delaware, Chesapeake Energy has leased the gas rights on a property. Giles questions whether the proposed ban on fracking in the New York City watershed will be permanent.

"We're in this situation because we all continue to consume so much stuff and depend on fossil fuels. And then we fight with our neighbors [about whether there should be hydrofracking]," he says. "Here and outside the