

**HB799: Consumer Protection:
Right to Repair Farm Equipment
Economic Matters Committee
March 11, 2020
FAVORABLE**



Maryland Public Interest Research Group (Maryland PIRG) is a citizen funded public interest advocacy organization with grassroots members across the state.

We support HB799, Right to Repair, or as we call it, the “Just Let us Fix our own Tractor Act.” Maryland Farmers invest a lot in their equipment, but companies use their power in the marketplace to make it harder or more expensive to repair, or even designed to fail.

Why Right to Repair for Farm Equipment?

Maryland farmers deserve protection from price gouging and consumer ripoffs

- Farm Equipment can cost hundreds of thousands of dollars, and our farmers need to know it will work at critical times during their season. Anything that limits their access to repair their own stuff, or locks them into a monopoly on who CAN repair it is bad for our local farms, our economy, and our food supply.
- We need our farmers to be resilient and not dependent on a monopoly of companies to ensure their equipment works. What would we do in a national crisis if they didn't have these tools?

It might seem like the information farmers are asking for is complicated, and the industry will claim it is, but even where electronic equipment is complex, repair is not. Manufacturers have built their repair tools, parts, and diagnostics to be used by minimally trained technicians in order to control labor costs. These same parts, tools, and diagnostics can be used with equal outcomes by any trained technician or farmer. [There are stories of some farmers who have turned to “hacking” to get access to these tools or gotten pirated diagnostic tools.](#)¹

[Video: Tractor Hacking](#)²



Manufacturers essentially have a monopoly on repairs. When only the manufacturer or their ‘authorized technician’ can fix something, they can charge whatever they want or they can say “it can’t be fixed” and push you into buying a new product or component. They do both.

¹ [Tractor-Hacking Farmers Are Leading a Revolt Against Big Tech's Repair Monopolies](#), VICE, Feb 14, 2018.

² [Tractor Hacking: The Farmers Breaking Big Tech's Repair Monopoly](#), VICE.

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[Farm equipment, like many things these days, are increasingly tech dependent, and powered by computers.](#)³ In order to repair it, you need some basic things: Spare parts, repair documentation (like the schematics and manuals), diagnostic software and any special tools. But when the companies that make farm equipment block access to all of those essential things, repair becomes difficult -- and in many cases *only* the manufacturer or their “authorized” repair technicians can do the repairs.

This bill will upset manufacturers and their current monopoly on repairs. That’s the point.

Manufacturers that currently prevent competition for repair services will be forced to compete. Some may lose business opportunities to competitors. This is the healthy outcome that spurs innovation, quality of service, and competitive pricing.

How Right to Repair Works

Right to Repair requires manufactures to make the diagnostic tools, manuals, replacement parts and tools available to the user or a third party available at a fair price. These are the critical things independent repair shops and consumers need to fix broken things.

The statute is adapted from the “Right To Repair” agreement for cars -- so we know the structure of the law works. The automotive industry agreed to these terms in 2014 after Massachusetts passed a law similar to what you are considering today. There have been no ill-effects from the application of this law, and consumers have the option of taking their car to whichever mechanic they choose.

If it works for cars and it should easily work for farm equipment. We respectfully request a favorable report.

FAQ

Will this give everyone access to the source code of their electronics?

No, this gives access to diagnostic tools and embedded software, NOT source code. All we are asking for is the tools the dealerships and authorized technicians use to fix equipment.

Won’t manufactures and their certified dealers do a better job repairing things?

We should let farmers and the market suss that out, like they have with cars. But the manufacturer-provided diagnostics both identify problems and confirm problems are cleared before machines work again, so it is unlikely to be a problem.

This is big, heavy machinery, is this dangerous?

Enabling independent technicians and farmers to have access to the tools they need will make repair MORE not less safe.

Will this let farmers skirt EPA emissions rules?

The only way to skirt EPA emissions rules is by illegally installing black market software, which this policy does not make easier to do. All we are asking for is the tools the dealerships use to fix equipment --- and unless there is a tool in there to dodge emissions standards, this argument doesn't make sense.

³ [Farmers Fight John Deere Over Who Gets to Fix an \\$800,000 Tractor](#), Businessweek, March 5, 2020.

What will this mean for Dealerships?

Dealerships sell equipment in a competitive market and while they make money, they also benefit extensively from monopoly pricing on repairs. Crain's Chicago Business magazine reported in May that repair yield "[profit margins up to five times better than new-equipment sales](#)"

The auto repair industry's experience with Auto Right to Repair since 2012 proves the fear that competition in repair will cause dealership closures is unwarranted. The presence of competition for repair has made dealerships more attentive to their customers, and remain dominant in all late-model repair services.

Do these reforms interfere with the warranty?

Federal law already protects consumers from losing warranty coverage due to using independent repair or non-OEM original parts. This will make those repairs more likely to be successful.

Farmers Fight John Deere Over Who Gets to Fix an \$800,000 Tractor

The right-to-repair movement has come to the heartland, where some farmers are demanding access to the software that runs their equipment.



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It's Husker Harvest Days, Nebraska's biggest agricultural trade show, and Kevin Kenney is working the pavilions. The engineer, inventor, and inveterate manure-stirrer is trying to be discreet. He has allies here among the sellers and auctioneers of used tractors and aftermarket parts. There are farmers, mechanics, and the odd politician or two who embrace him. But enemies lurk everywhere.

Kenney leads a grassroots campaign in the heart of the heartland to restore a fundamental right most people don't realize they've lost—the right to repair their own farm equipment. By sheer dint of personal passion, he's taking on John Deere and the other global equipment manufacturers in a bid to preserve mechanical skills on the American farm. Big Tractor says farmers have no right to access the copyrighted software that controls every facet of today's equipment, even to repair their own machines. That's the exclusive domain of authorized dealerships. Kenney says the software barriers create corporate monopolies—and destroy the agrarian ethos of resiliency and self-reliance.

“The spirit of the right-to-repair is the birthright we all share as a hot-rodding nation,” he says, channeling his inner Thomas Jefferson and Big Daddy Don Garlits. Tall and trim at 55, with gray-flecked hair and a passing resemblance to a corn-fed George Clooney, Kenney has kicked up significant pushback against the computerization of U.S. agriculture. His crusade to pass right-to-repair legislation in Nebraska has spread to proposals in 20 states. Last spring, Senator Elizabeth Warren, campaigning for the Democratic presidential nomination, called for a national law “that empowers farmers to repair their equipment without going to an authorized agent.”

At stake for Deere & Co. and other big manufacturers is the free rein they've had to remake farming with data and software. The transformation has helped U.S. farmers increase productivity, but at the cost of a steady shift in operational control from farmer to machine. One of the world's oldest and most hands-on occupations has literally become hands-off.



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Anything a farmer does on a modern tractor, beginning with opening the cab door, generates

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“One tweak could cascade throughout an entire software system and lead to unintended consequences,” says Julian Sanchez, Deere’s director of precision agriculture strategy and business development. In a fast-moving vehicle weighing as much as 20 tons, he says, that could mean carnage. It doesn’t take much imagination to envision a coding mistake by a hacker, or even a well-intended farmer or mechanic, that sends a 500-horsepower combine careening into a farmhouse or through a clutch of workers eating lunch in the fields.



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For a decade, the right-to-repair battle cry has rattled around rarefied circles of digital-rights activists, techno-libertarians, and hands-on repair geeks—primarily on the East and West coasts. Now, largely because of Kenney’s persistence, it’s tugging at the Farm Belt. Why, activists ask, should the buyer of an espresso machine or laser printer have to get replacement pods and cartridges from the original manufacturer? Who is Apple Inc. to dictate that only its certified parts can be used to repair a broken iPhone screen? What gives Deere the right to insist, as it did in a [2015 filing](#) with the U.S. Copyright Office, that its customers, who pay as much as \$800,000 for a piece of farm equipment, don’t own the machine’s software and merely receive “an implied license” to operate the vehicle?

“We’ve been telling people for years that if it has a chip in it, it’s going to get monopolized,” says Gay Gordon-Byrne, executive director of the [Repair Association](#), a national coalition of trade, digital-rights, and environmental groups that promotes the repair and reuse of electronics. Gordon-Byrne serves as an informal adviser, mentor, and reality check to Kenney. She’s also helped him set a clear goal: a law modeled on a landmark Massachusetts statute, passed in 2012, that required the auto industry to offer car owners and independent mechanics the same diagnostic and repair software they provide their own dealers. After it passed, automakers relented and made all their repair tools available nationwide.

That’s what Kenney demands for farm equipment—and what Deere and its competitors reject.

At [Husker Harvest Days](#), an ag industry blowout held every September in Grand Island, Neb., Kenney moves warily. After lunch, he drops by to see Kenny Roelofsen, co-owner of Abilene Machine LLC, a five-state retailer of used equipment and spare parts based in Abilene, Kan. Roelofsen’s company is instrumental in keeping older tractors in the field, an essential service for smaller farmers on tight budgets. But he says software barriers in newer machines are killing his incentive to make and sell parts. “I’ve stopped developing parts for machines built after 2010, because I know my customers can’t work on them without software,” he says. “Only giant corporate farms can afford newer equipment. For the small guy, it’s not economically feasible.”

Deere’s pavilion at Husker Harvest Days occupies a huge corner lot decked out in green and packed with gleaming new machines. Kenney is talking quietly there beside an enormous 9000 Forage Harvester, priced at about \$600,000, when a familiar face approaches. It’s Willie Vogt, executive director of content for [Farm Progress Cos.](#), the agricultural publishing company that produces Husker Harvest Days and several other big farm shows. Deere is one of three corporate sponsors here; it also sponsors Farm Progress’s namesake show, which will be held in Iowa in September.

Vogt stops to chat. Kenney tenses up. Vogt, whose bio says he’s covered agriculture for 38 years and oversees 24 magazines and 29 websites, says he’s still not ready to publish stories on right-to-repair. “It’s a very complicated issue that generates more heat than light,” he says.

The two men square off on the green carpet. Vogt says Deere can’t let people meddle with the machines for safety reasons, pointing to the 9000 harvester’s enormous rotors by their feet. He tells Kenney that “the left side of the issue” pays lip service to repair but really wants access to manufacturers’ source code to modify horsepower, emission controls, and other programmed functions. Kenney fires back: “Why should farm vehicles be treated any differently than cars and trucks?”

Kenney is disgusted. “Willie Vogt’s basically a knight for Deere,” he says, leaving the pavilion. “It’s like Napoleon when he ran through Europe. He didn’t fight. He knighted everyone.” Vogt, in a follow-up

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farm machinery sales in the U.S. and more than a third of equipment revenue worldwide—a bigger market share than that of the next two tractor makers, Case New Holland and Kubota Corp., combined. Customer loyalty is legendary. A 2017 survey by *Farm Equipment* magazine found 84% of Deere owners plan to purchase another green machine.

The company says the world needs digitized farming to feed the 10 billion people expected on Earth by 2050. The proprietary software Kenney and other repair advocates revile enables sensors and computers on machines to log and transmit data on everything: moisture and nitrogen levels in soil; the exact placement of seeds, fertilizer, and pesticides; and, ultimately, the size of the harvest. Having access to so much real-time data enables farmers and their computer-controlled machines to plant, spray, fertilize, and harvest at optimal times with as little waste as possible. All the farmer has to do is link his equipment to agronomic prescriptions beamed to him over the internet.

This is farming's version of big data, and the potential is staggering, enthusiasts say. The efficiency gains of recent decades have increased productivity an estimated 1.4% per year for the past 70 years, and U.S. farmers now produce an average corn yield of about 175 bushels an acre. That's still less than 30% of what some hyperattentive farmers have shown is possible under optimum conditions. Deere and other agriculture technology companies are betting that what the industry calls "precision agriculture" can dramatically expand output.

"If you were to walk around our buildings with hundreds, thousands of software engineers, it's like every line of code being written there is making it into a machine that's helping a farmer farm more precisely and reliably," says Deere's Sanchez. Consider machine sync, he says, the algorithms that direct the high-speed whirl of different farm machinery. As a combine processes a field of corn or soybeans during harvest, it sprays the separated grain into a wagon towed alongside the combine. When the wagon is full, it's driven to the edge of the field and emptied into a truck while another wagon slides in to take its place. The vehicles are in constant motion, synchronized by software that controls the steering, drive train, and actuators on each like a ballet choreographer. The same technology enables a planter machine to place 40,000 seeds in an acre of land with the precision of less than an inch.

"I realized it all goes back to software. That was the beginning of my John Deere derangement syndrome"

There's also a more obvious motive for protecting proprietary software: money. Historically, the healthy profit margins of the parts and services units have helped smooth out earnings when demand for machines is down. For Deere and its dealerships, parts and services are three to six times more profitable than sales of original equipment, according to company filings. Farmers need to keep aging equipment running; that helped increase annual parts sales by 22%, to \$6.7 billion, from 2013 to 2019, while Deere's total agricultural-equipment sales plunged 19%, to \$23.7 billion. If a right-to-repair law pried open the parts and services markets to competition, Deere's cyclical balancing act could falter. Sanchez denies the company is fighting to protect a parts and services monopoly. "On the repair side, I

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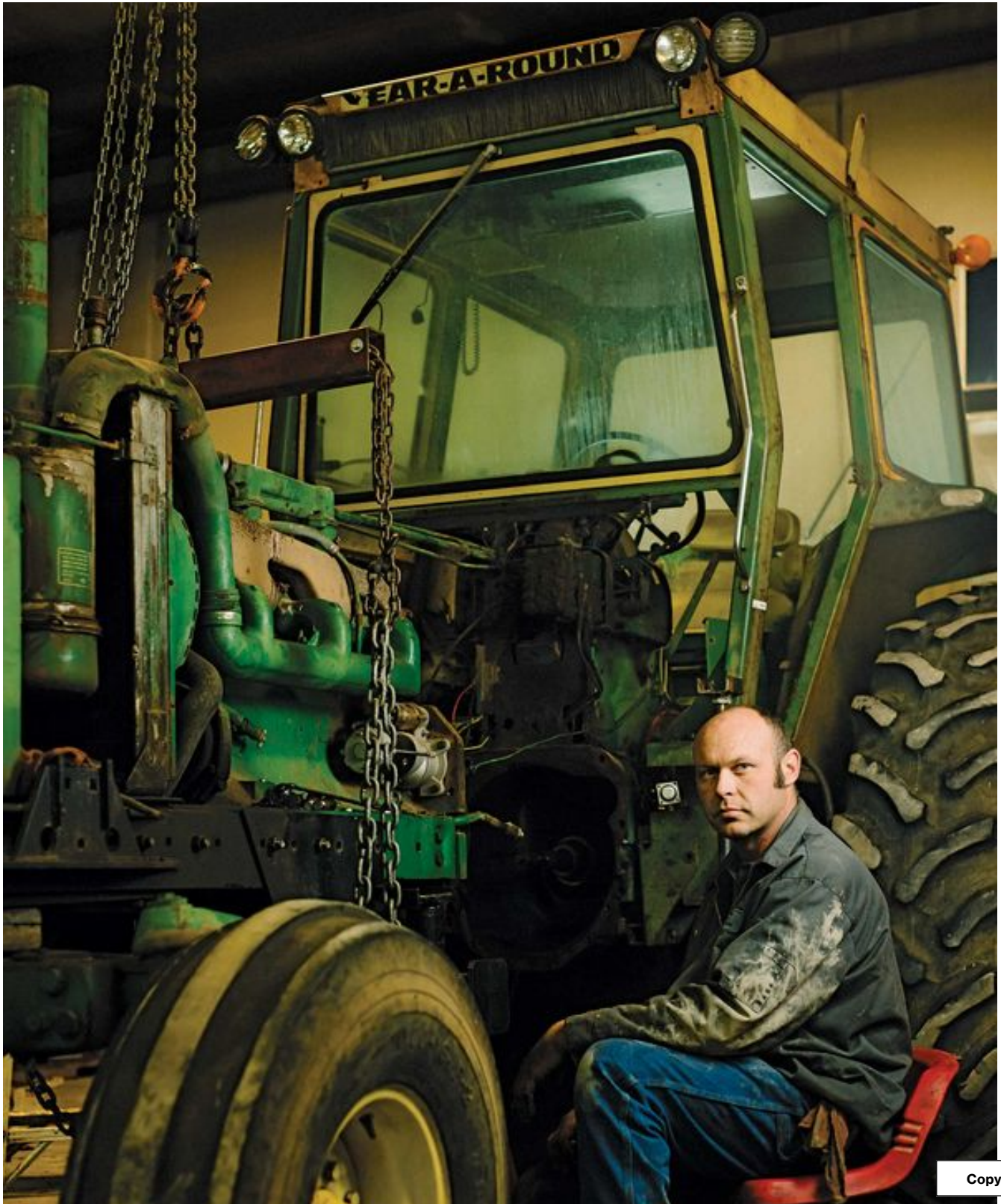
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or service manual you need,” he says. “Now it’s really a struggle. We can’t even get basic wiring schematics for particular brands.”



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software to restart it unless he or the owner hauls the machine in or pays for a mechanic to make a house call. A few years ago, Davis paid \$2,500 for a pirated version of John Deere's 2014 Service Advisor software from someone in Hong Kong, but the discs are now long out of date.

Davis scoffs at a main industry argument against providing repair software to farmers and independent mechanics: that they'll abuse it to disable emission-control systems. The incentive works the other way around, he says. Many farmers who own machines going off warranty delete the emission-system software to avoid costly future repairs—often with the backdoor assistance of the dealers, he says. If right-to-repair legislation led to more independent mechanics who could resolve faults quickly and easily, owners would have less motivation to disable emission controls, Davis says. "The way it is now is unfair to owners, and it's unfair to me."

To Kenney, the notion that farmers can't work on their own tractors is an affront to the rugged individualism that built America. Raised on a central Nebraska farm, he was always passionate about machines. When he was 12, he and a friend rebuilt the transmission of his dad's 1953 Studebaker pickup, racing to reassemble the parts in a single weekend before his parents returned from a trip.

He earned his agricultural engineering degree at the University of Nebraska in Lincoln, and he'll still drive a dozen hours in a weekend to attend a Cornhusker football game. He's angry with his alma mater, though, for no longer making agricultural engineering students get their hands greasy working on tractor engines. An administrator told Kenney, in an email exchange that still pains him, that engine repair is taught at community colleges now. "We couldn't graduate if we didn't know how to break down and rebuild a diesel engine," he says.

After failing as a tenant farmer in the early 2000s, Kenney patented a design for a low-emission engine that burns diesel with a mix of ethanol and water. He couldn't commercialize the so-called dual-fuel technology. In his mind, the big equipment manufacturers were making so much money rigging their conventional diesel motors with clumsy emission-control systems to meet U.S. Environmental Protection Agency standards that they had no interest in cleaner-burning alternatives. "I realized it all goes back to software," Kenney says. "That was the beginning of my John Deere derangement syndrome."

He now makes his living installing tractor software for a farm data company and tuning and tweaking trucks and tractors. His calling, however, is the right to repair. He's spent the past four years turning conservative farmers against the corporate incarnation of motherhood and apple pie.

For Nebraska farmers, horror stories about tractors "bricking," or shutting down from a computer fault, are as common as waterhemp in their cornfields—and just as annoying. A Deere spokesperson

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over. He says the five-hour wait for someone to show up and do a half-hour software fix contributed to a loss of at least 15% of the crop. Since then he doesn't take chances. "We just let the machine run all night," he says.

Andrew McHargue's tractor went down for an entire week during planting season while he waited for technicians to solve a problem. The Chapman, Neb., farmer paid \$300,000 for the new machine in 2014, and over the next few years sank almost \$8,000 into clearing fault codes. He finally mothballed the combine in favor of a 2010 model without the latest software and emission-control systems. The used tractor cost him an additional \$160,000.

"I'm trying to sell the 2014, but nobody wants it," says McHargue, a board member of Nebraska's Merrick County Farm Bureau. "The whole disconnect is about who really owns it. If it's mine, I should be able to modify and fix it myself. There's no reason we shouldn't have a repair system exactly like the auto industry's."

As things stand, Deere has the technical ability to remotely shut down a farmer's machine anytime—if, say, the farmer missed a lease payment or tuned a tractor's software to goose its horsepower, a common hack widely available through gray-market providers. A Deere spokesman says many manufacturers can remotely control vehicles they sell, but Deere has never activated this capability, except in construction equipment in China, where financing terms require it to.



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see their faces when I show them the SIM card under the seat. They go ballistic.”

In 2011, when Deere began gathering and transmitting production data from farmers’ machines, it didn’t immediately tell them. When they found out, some considered it a breach of trust, and some accused the company of appropriating proprietary information. Many growers regard their methods as trade secrets that give them an advantage over competitors when vying for terms with creditors and landlords. “If data gets out, negotiating powers are weakened,” says Terry Griffin, an agricultural economist at Kansas State University. “Farmers’ fears are very real. It’s not paranoia.”

There’s also a scramble for farmer data. Companies from startups to behemoths such as Bayer AG are racing to acquire it to help develop and sell their products. Aggregated in datasets covering millions of acres, the information can yield valuable insights about which seeds thrive in which soil types and with which fertilizers and pesticides.

Today, according to Sanchez, farmers control their own data and decide who has access to it. That appears to contradict a disclosure statement on Deere’s website, which says the company may share user data with its “affiliates and suppliers.” Equipment makers say farmers want the data support. The world’s No. 4 tractor maker, AGCO Corp., which makes Challenger and Massey Ferguson machinery, initially refused to disclose customers’ production data to anyone. It changed its policy after farmers asked for more data services. “Customers really want us to help them,” says Bill Hurley, an AGCO vice president.

Kenney worries more about security than privacy. He claims equipment makers’ remote control over vehicle software makes farmers—and the U.S. food supply—vulnerable to sabotage. His concerns have grounding. In 2016 the FBI issued a warning that U.S. agriculture is “increasingly vulnerable to

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Before closing time at Husker Harvest Days, Bruce Rieker, chief of government relations for the Nebraska Farm Bureau, sits down to talk in a breezeway behind his group's pavilion. The bureau's delegates have twice voted, almost unanimously, in favor of the right to repair. Yet after its staff spent months working with Kenney and a group of farmers to draft a state bill in late 2018, the Farm Bureau dropped it. Kenney says he was told they missed the filing deadline.

Rieker, who spent years as a Republican aide in Congress, says he's the one who killed the proposal. Despite bipartisan support in Nebraska's legislature, some powerful lawmakers didn't want to take on Deere and the equipment lobby and told the two sides to settle their differences without legislation. "A lot of times I believe the best solution isn't legislative or regulatory, it's parties working things out," he says.

Kenney and his collaborators are livid when told it was Rieker who aborted the legislation. "I feel stabbed in the back," says Tom Schwarz, a Nebraska Farm Bureau leader who'd spent months working on the bill. "Why would we send that signal to the companies that you don't need to worry about us—that we're not going to take any action that threatens your revenue?" The Farm Bureau is negotiating with industry trade groups for farmers' access to the same software provided to dealers. Progress has been limited, and the bureau voted in December to consider another bill in 2021. The Association of Equipment Manufacturers, trying to get ahead of actions like that, is coordinating a 2021 release of repair and diagnostic tools for farmers.

All this could be moot if legislation passes in one of the other states where Kenney and the right-to-repair movement have inspired bills. Prospects of passage this year look good in Massachusetts and New York, where farmers don't use massive machines such as combines and the equipment lobby is less influential, says Gordon-Byrne of the Repair Association. "That will absolutely open the floodgates," she says. "If you can buy software in Massachusetts, you'll have it in Nebraska in milliseconds."

Kenney, not the type to wait patiently, recently emailed Gordon-Byrne a photo of a 2017 Deere combine he'd proudly tuned up for a friend with an extra 50 horsepower using gray-market software. She wasn't impressed. Such tweaking could fall outside copyright law and amount to theft of services, she warned him, because Deere sells higher horsepower models of the exact same machine. The only difference is the software setting. She wishes she had "100 Kevins," she says, but a provocation like this probably isn't good for the cause.

Kenney wasn't buying it. He wrote back: "Gay, thanks but why was it OK years ago to pull the diesel engine fuel pump off, screw the horsepower up, put it back on, and run it with no consequences of 'theft'? Just because these engines are now electronic vs. mechanical, we've lost our rights to repair and modify? Back in my day we truly believed, Hot-Rodding is a National Birthright!"

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Farmers Fight John Deere Over Who Gets to Fix an \$800,000 Tractor
by Peter Waldman and Lydia Mulvany

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