

Is Deere Pushing Electric Tractors? An Exclusive Interview With John Deere's CTO

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John Deere CTO Jahmy Hindman says to power Deere's 8R tractors with a lithium-ion battery today, the numbers show it's twice the volume, twice the weight, twice the mass, and four times the cost. He says that's why electrification for larger, higher horsepower equipment doesn't pencil.

(Mike Byers)

Autonomy is gaining traction in the ag equipment space. Are electric tractors next? Rumors have been circulating about the direction of Deere's technology investments, and Farm Journal had the chance to sit down with John Deere's Chief Technology Officer, Jahmy Hindman, to set the record straight and uncover what Deere sees as the future of equipment and ag technology.

The conversation was at the backdrop of CES, the Consumer Electronics Show in Las Vegas, Nev., earlier this month. Even though Hindman was there talking to tech gurus, he isn't your typical CTO. Hindman is the first to admit he would rather be out in the field talking to farmers than sitting in his office or even having conversations at CES.

When asked how many farms he's visited during his time as CTO, he says he's lost count. Even so, he says he values hearing from farmers all along the spectrum of ag tech, which includes those who barely use technology on the farm, all the way to the early

adopters who are fully immersed in the technology available today.

"And it's all different production systems from our high value crops, almonds and citrus orchards, to corn, soybeans, to small grains, such as lentils, chickpeas, those sorts of things in Western Canada. That's why I love agriculture; it's so diverse. And our customers do something that's just so important for the globe, for the world population. I think there's no better place to work."

Why CES?

Deere had a noticeably larger presence this year, even kicking the event off with the [keynote address](#). During the keynote, Deere not only highlighted technology at work today, but where the company sees the world of ag tech going.

"I think it's important for the world to know where their food comes from," Hindman says, when asked why Deere had such a large presence at CES this year. "I think it's important for people to know the technology that goes into food production, in particular. And there's no better stage to tell that story than CES. It maximizes the number of people who get to hear it, to a population, frankly, that really needs to know about it and really needs to hear it."

When asked if Deere is a technology company, Hindman said there's no doubt that's the case, but he said that doesn't discount the fact that Deere is also a machinery company.

"I think it's often understated how much technology is in our machines and in the production systems themselves, and how much technology farmers deploy on the farm today," he says. "I think there's no doubt that Deere is a technology company, but we're also a manufacturing company, and none of the technology works in and of itself. You still have to have the equipment like the sprayers, and the tractors and the combines to bring that technology into the field and make it useful."

The Acceleration of Autonomous Equipment

Autonomy was a popular topic at CES. Many of the CES attendees who visited the Deere booth had the chance to see a self-propelled sprayer in person and wanted to know if the machinery was autonomous. Hindman says it's those questions that opened the door to talk about how some of the technology at work today—like See and Spray—is a glimpse of what's to come.

"The delivery of herbicides is step one, but you can start to think about other things like growth regulators in cotton. You can think about things like the types of chemicals that get applied on the farm as being able to be moderated through scenes. Those are all opportunities for us, once you have the ability to sense something in the field and then act on it," he says.

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Hindman describes autonomy the same way, saying Deere has already made a down payment on autonomy for the future with its autonomous tillage solution. He says the company started with tillage, as that was the easiest place to start.

"It's the most practical from a technology perspective place for us to start, but eventually that's going to become an autonomous planting opportunity, it's going to become an autonomous grain cart opportunity. When we get tractor jobs finished, we'll look at sprayers and at combines," says Hindman. "Our goal is by 2030, in certain production systems, to be able to offer farmers a fully autonomous production system -- from spring tillage and planting all the way through harvest."

Deere's 2030 goal is clear, but Hindman understands not every farmer will want to go all-in on autonomy. That's why he's adamant farmers will have a choice of options, even in 2030 and beyond.

"There's a reason there's a cab still on the tractor," says Hindman. "There are a lot of growers that maybe don't want the autonomy solution or don't see value in it for themselves at this point in time, but they still want to be able to operate the machine. There are a lot of jobs that are done on the farm that we won't make autonomous. (Maybe) you still want to move snow in the wintertime in your driveway where you're going to do that from the cab of the tractor, right? And as a person that spent a lot of time in a tractor seat, there's just an emotional attachment and a satisfaction that you get from seeing the work done yourself. And so, there's a reason that a cab is still on the tractor. I think that's an important part of it."

Setting the Record Straight on Electric Tractors

Autonomy can spark an emotional reaction from farmers, but the concept of electric tractors is one that garnered a lot of attention on social media this past year. A social media post went viral this year, claiming Deere was pushing larger farmer operators to go all-electric. So, we asked Hindman about it. In short, Hindman says the post was simply not true.

"It didn't come from us, so it's a bit of a mystery," Hindman says. "I don't really know the genesis of that or where it started. I think the buzz around electrification, in general, moved it into ag and it became a thing of its own. And it does have a place. I'm not going to say that electrification doesn't have a place in agriculture, but right now, just from a pure physics perspective, not at the high-power levels."

So, where does it make sense? Hindman says in lower horsepower equipment, Deere's findings show electrification could be a solution.

"In rough terms, I would say in 100 horsepower and under, and in relatively light duty cycles, lithium-ion chemistry batteries can work," he says. "You can package enough energy into the tractor to make that work. As you get into higher power levels? The answer to that is no."



Watch Video At: <https://youtu.be/fcbogl8EVwl>

During Deere's CES keynote address, Hindman even addressed why electrification doesn't make sense in higher horsepower, heavier duty equipment.

"I talked about the 8R tractors," he says. "When I ran the numbers on it, if you power that with a lithium-ion battery today, it's twice the volume, twice the weight, twice the mass, and four times the cost. That just doesn't pencil."

Instead, Hindman says Deere has found renewable fuels and renewable diesel is a better fit for higher horsepower application when you get into the carbon offset discussion.

"Things like renewable diesel, from soybean oil or canola oil, or ethanol as an alternative in a compression ignition engine, would be a more interesting solution at the higher power levels," says Hindman.

He says the limitation for using more renewable diesel products today is availability.

Talking the Reality of Energy with the Biden Administration

Showing the science behind what works—and what doesn't—is something Deere was able to also communicate to the Biden administration. U.S. Energy Secretary Jennifer Granholm toured John Deere's booth at CES, and even though she got a first-hand look at Deere's first-ever electric excavator on display at their booth, she also saw other equipment that's not electric.

"There's not a single solution that works for everybody. And that single solution? Certainly not electrification. I think it is a good solution in some cases, but not in all cases," he says. "And so, we had Secretary Granholm here, that was one of the points that I tried to make to her. Hopefully, that resonates," he says.

"I think we've historically been data rich, and a lot of data has been at the fingertips of growers, but it doesn't necessarily surface itself to insights that you can make good decisions from," says Hindman. "And I think we're just beginning to start to get into maybe the last five years, an environment where that data is becoming more insightful. We're figuring out ways to draw conclusions from it, whether I need to change a crop rotation, or whether I've got a water problem in this particular field, or I need to put more nutrients out in this location, those things are starting to surface because of the data," says Hindman.

He agrees the revelation has been recent, and he says there are a couple of reasons as to why.

"If you look at Operations Center, as an example, and the usage of that not just in desktop but in mobile platform, that's really started to pick up substantially," he says. "And I think it's because farmers are seeing value in it. They're seeing that it can improve their outcome with that information. And it's served to them in a way that makes sense. It is intuitive."

What Does the Future of Farming Look Like?

Now that the data piece is driving much of these technology advancements, where is agricultural technology going in the years ahead? Hindman thinks farming will be much more predictable than it is today.

"I say predictable in the sense that labor, where you're not worried about labor anymore because you've got the ability, whether you use it all the time or not, for the machines to do some of the work themselves," he says. "I do think we will be so much closer to plant-by-plant management at that point in time, especially in coarse grains, than we are today. And that's going to unlock the ability for us to do much more of this data analytics and be much more prescriptive in managing the overall crop, and the overall production of that crop and our inputs to that crop, on a plant-by-plant basis."