

(BN) Deere Made-in-America Tractors Plow Brazil Soil as Farms Upgrade

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By Bryan Gruley and Shruti Singh

July 5 (Bloomberg) -- On a scorching afternoon in the savanna of eastern Brazil, Wilson Horita is 8 feet above the ground, bouncing on the driver's seat of the new green-and-yellow tractor parked on his family's farm.

"It's totally pneumatic," he tells a visitor. Horita doesn't drive tractors, he buys them. "Let's talk about comfort," he says, speaking in Portuguese as another Brazilian, perched on the ladder to the cab, translates.

"There's totally acoustic insulation," Horita says, meaning the cab dulls the roar of the 270-horsepower engine and the clank of row-crop planters slicing through soil. "And," he continues, sounding more like a car salesman than the farmer he is, "there's air conditioning."

The cab's interior could pass for a BMW's, Bloomberg Businessweek reports in its July 9 issue, only with storefront-size windows and a console crowded with buttons, knobs, and levers that control hands-free steering, a rear hitch, and the planter or grain cart being towed. A color touchscreen tracks hourly fuel use, area covered, engine oil pressure, and a bunch of other measures. Another screen linked to a yellow-domed GPS receiver on the roof lets the driver watch a digital version of his tractor trundle through digital fields. The GPS keeps the tractor from rolling over more than 2 1/2 centimeters (1 inch) of the same ground twice. Horita taps an orange pedal with his right foot.

"The accelerator," he says. "You don't use that."
That's because the tractor can drive itself, controlling its own speed and direction.

Iowa Factory

Horita, a slight 52-year-old of Japanese descent, is wearing patterned dress slacks and a blue pinstriped shirt open at the collar. A gold chain glints on his sun-browned neck, and a pack of Dunhill cigarettes nests in his shirt pocket. On his feet are two-toned shoes bearing the leaping stag logo of Deere & Co., the U.S. company that made this tractor and more than 160 others on his farm. Horita glances over his shoulder through a window that was glued into place by a robot in an Iowa factory. A driver must see well, he says, to make sure whatever he's pulling is working properly.

He's heard Deere is working on a new technology that will enable one tractor to control six others trailing behind, reducing the need for drivers from seven to one. He likes the sound of that, though he does wonder how a single operator would be able to keep an eye on everything the tractors are towing.

"Technology is ahead of our expectations," he says, shrugging.

Cotton-Pickers

Horita and his family have placed a big bet on Deere's technology to help them farm their 212,000 acres (86,000 hectares), which is more land area than the city of Chicago. The model 8270R tractor in which Horita sits cost \$170,000. It's part of Deere's new 8R line (the 270 denotes horsepower).

The farm's fleet also counts 33 Deere cotton-pickers that run about \$600,000 apiece, eight Deere combines that can cost \$350,000 each, and dozens of sprayers and planters, for a total investment of \$40 million.

Most of the Deere gear was purchased in the last few years, as the family switched from CNH Global NV and other makers.

Horita says it wasn't so much the high-tech gadgetry that persuaded them to go with Deere.

"The main difference is the durability," he says. Deere's tractors are pricier than others, but they've paid off in productivity and reliability. The Horitas can't afford breakdowns. There's simply too much money to be made.

Ditching Plows

An industrial revolution of sorts is sweeping across the developing world's corn, rice, soybean, wheat, and sugarcane fields. Some farmers in China and India are finally ditching horse- and ox-drawn plows to buy their first-ever tractors.

Others are upgrading to bigger tractors and combines with more power and advanced technology that helps farmers plant and harvest faster and more precisely with fewer workers.

Both trends benefit Deere, the Moline, Illinois-based company founded in 1837 by John Deere, a blacksmith who developed a polished-steel plow and figured out how to mass-produce it. After 175 years and eight more chief executive officers (the Roman Catholic Church has had 12 popes in the same span), Deere remains the world's largest maker of farm equipment.

"Deere is quintessential made-in-America," says Andy Kaplowitz, an analyst with Barclays Plc in New York.

Most Americans know the John Deere riding mowers at Home Depot or those green-and-yellow caps sported by urbanites who've never ventured near a farm. But the bulk of Deere's revenue comes from machinery that would barely fit in a typical backyard.

Few Acquisitions

From its low-slung headquarters tucked into woods near the Mississippi River, Deere dominates the \$23 billion U.S.-Canada market for farm equipment with a 60 percent share, according to William Blair & Co. That helped the company post a record net income of \$2.8 billion on record sales of \$32 billion for the fiscal year ended Oct. 31.

Deere's strategy is to couple state-of-the-art machines with dealers who work so closely with farmers that they become virtual partners, often locking in customers over several generations. The company makes few acquisitions, preferring to develop products internally. Its biggest shareholder, with a 6.2 percent stake, is Cascade Investment LLC, Bill Gates's personal money-management firm.

Unsuitable Tractors

Replicating its domestic success overseas hasn't been easy for Deere. For years, tractors it designed for the Great Plains were too big or otherwise unsuitable for overseas growers, who have to contend with smaller plots, roadway driving, and uneven terrain.

"You can't go with a German tractor and conquer the world or a U.S. tractor and conquer the world," says Markwart von Pentz, who manages Deere's sales outside the U.S. "You have to design to the requirements of the market."

European farmers tend to want more speed and turning ability, while rice growers in India prefer compact vehicles that won't sink in paddies.

David Victor Makin, CEO of Brazilian cane grower Agro- Pecuaría CFM, says he's happy with his 300 tractors made by Agco Corp., the Duluth, Georgia-based manufacturer that, as one of Deere's main competitors, builds Valtra and Massey Ferguson tractors. He says some of Deere's high-tech options are "frills" that are prone to break and that his 185-horsepower tractors have plenty of muscle and are more versatile on hilly sugarcane fields.

Global Ambitions

“If you want somebody to get from home to office, you don’t buy a Harley-Davidson, you buy a little scooter,” he says.

Deere’s global ambitions are important not just to the company and its shareholders but also to the world. To feed a population expected to hit 9 billion by 2050, food production must increase by 60 percent, according to the United Nations’ Food and Agriculture Organization.

With arable land available, Brazil, Russia, India, and China have emerged as new agricultural powers. But even they lack enough acres to meet demand. Advances in seed, fertilizer, and pesticide technology must work hand-in-hand with tractors and other equipment to help farmers squeeze every last bushel of yield from their fields.

World tractor unit sales are expected to grow about 1.8 percent a year through 2015, to about 1.4 million; higher prices and the mix of products may push revenue up about 5 percent, says consulting firm AlixPartners. While China and India are buying the most tractors, many customers there favor smaller, cheaper models, made by domestic companies -- Foton Lovol International Heavy Industry Co. in China and Mahindra & Mahindra Ltd. in India.

New Products

Deere CEO Samuel Allen aims to increase total sales to \$50 billion by 2018, with half from outside the U.S. and Canada, up from 39 percent today. In the last few years the company has finally begun to make significant gains in Brazil and other countries where its rivals -- mainly Agco and CNH of Amsterdam, which makes Case and New Holland machinery -- have deeper roots. Twenty years ago, Deere had two tractor factories outside the U.S. Today it has nine, in Germany, India, China, Mexico, and Brazil.

Last year in Europe, Deere introduced more than 100 products. Nearly half of Deere’s 61,300 full-time employees work outside the U.S. The company is recruiting dealers native to the countries, such as Olmiro Flores de Oliveira, who sold the Horitas their tractors and other machines.

Large Farms

It’s no surprise that Deere has moved deliberately. A company as old as Deere “almost by definition is methodical,” says Allen, a genial 59-year-old who graduated from Purdue University hoping to become a golf pro. He’s sipping red wine over dinner at a single table set up in a common area at Deere headquarters.

“We’re normally not the first to market,” he says.
“We’re normally followers, but we do it better.”

One key to Deere’s global expansion is the 8R tractor line, the first the company designed for farmers worldwide. The 8R is still too big for some places -- India, for example -- but it’s suited to the growing number of large farms outside North America.

A base 8R is about 20 feet long, with a narrow snout jutting from a boxy, 11-foot-high cab. Depending on which attachments it carries, an 8R can weigh more than 30,000 pounds (13,608 kilograms). Allen likes to boast that its technology has more lines of software code than a space shuttle.

Ford Anxiety

It’s manufactured in Waterloo, Iowa, a town of 68,000 that straddles the Cedar River, cheers for the Waterloo Black Hawks amateur hockey team, and is about one-fifth the size of the Horitas’ farm.

The 8R's ancestors were born here nearly a century ago. In 1918, Deere was 81 years old, the founder was long dead, and the company that was built on plows faced a crisis: Competition from motorized tractors.

Deere's board of directors met that January amid worries that the mighty Ford Motor Co. was getting into the tractor business. Director Willard Velie gave the board a letter saying, "I think it is safe to eliminate the horse, the mule, the bull team and the woman, so far as generally furnishing motive power is concerned."

Waterloo Gasoline Engine, maker of the Waterloo Boy tractor, was for sale. The Deere board debated buying it.

Waterloo Foundry

"I am not particularly enthusiastic over the tractor business," director William Morgan said, according to minutes of the meeting. "But if it is coming, and I believe you cannot stop it, we should get into it in some way."

Deere bought the tractor maker for \$2.35 million, about \$36 million in today's dollars.

Today 5,600 people work in Deere's Waterloo complex. With its own foundry, engine factory, engineering center, and assembly plant, it recalls Henry Ford's vertically integrated car-building facility near Detroit in the early 1900s.

Deere has invested \$1.1 billion in Waterloo in the last decade and added 850 jobs in the past two years. The company won't say how many tractors it produces, but Waterloo ships thousands each year to more than 130 countries. Deere makes most of its high-horsepower tractors there, from the 6R line, with horsepower ranging from 170 to 210, to the monster 9Rs, which can reach 560 horsepower.

Farmer Interviews

Deere started developing the 8R in 2006. After interviewing growers around the world, the company in 2009 introduced the 8R with bigger cabs and easier-to-use displays. Even as the 8R made its debut, Deere was working on the next version, in part to meet stricter emissions standards in some countries.

The company interviewed 1,500 customers. Many spoke of a labor shortage as the world's population shifts to urban areas, putting a bigger premium on automated machinery. With crop prices high and costs for seeds and fertilizer also rising, farmers with limited windows for planting and harvesting can't abide equipment breakdowns.

On the Horita farm, a single day of downtime during planting can cost \$1,200 per tractor -- which can add up fast on a farm with 200-plus machines.

"The farm is basically a factory in the middle of nowhere," says Sanjay Sarma, an engineering professor at the Massachusetts Institute of Technology. "If your machine breaks, you are up a creek."

Many farmers wanted the next 8R to be more powerful than the original but just as agile and fuel-efficient. Growers in Russia and parts of Brazil in particular desired tractors that could haul wider planters and other implements so fewer tractors -- and workers -- would be needed.

Tractor Frames

Esa Laensitalo, Deere's marketing director for global tractors, visited a roughly 123,500-acre farm in Brazil's Mato Grosso region in January. Reviewing notes he scrawled in a pocket-size journal, Laensitalo says the farmer had long used 11 tractors to pull 15-row planters. He now has three 8Rs pulling 30-row planters.

The latest version of the 8R was introduced last year. Manufacturing began in the Waterloo foundry where Deere, unlike some major rivals, makes its own metal tractor frames.

Executives say this is a competitive advantage because Deere's frames are constructed from "thin-wall castings," pieces less than half-an-inch thick.

Because these pieces are so thin, they can be bent, or articulated, while remaining strong enough that the frame is narrower between the tires. That helps the tractor make tighter turns and maneuver better on roads. Deere executives like to brag about the 8R making a figure-eight within the turning radius of a rival machine.

Reconfigured Plant

Last year, Deere reconfigured the Waterloo tractor assembly line to be less linear. Major modules -- engines and front axles in the northeast corner of the plant, transmissions and rear axles in the northwest -- are put together separately so that a mistake in either area won't halt assembly altogether. Cabs are built in another area and dropped onto frames near the end of the line. Deere says this has reduced the time it takes to move a machine from frame to finished, lowering costs.

Near the south end of the factory, a queue of cab-less tractors shuttles toward the paint shop, a steel-and-glass tunnel the length of a football field where robots like giant octopi spray the machines in Deere's signature green. Humans in bulky white protective suits add dabs of yellow to wheel wells.

"We can paint in any color," factory manager Thad Nevitt says. "But we don't."

Customer Options

Yet few 8Rs are identical, because the company offers a vast array of options. Imagine sitting down at a Chrysler Group LLC dealership and choosing among -- instead of two or three option packages -- six different front axles, five transmissions, 13 rear hitches, and 54 configurations of front wheels and tires. Not to mention a menu of radio, mirror, cold-weather start, and fender packages.

A farmer or dealer shopping for an 8R can flip through 358 option codes for the base tractor and an additional 114 codes for attachments. The choices aren't cheap: The most expensive of the four lighting options, a 29-lamp array that creates virtual daylight for farmers working at night, runs \$3,442.

There are various versions of AutoTrac, the GPS-linked system that lets the tractor do the driving itself, and of JDLink, which allows farmers and dealers to monitor tractors remotely.

Precision Farming

Used along with onboard sensors that track crop yields, these tools can help a farmer decide, for instance, which parts of a field need more or less fertilizer -- so-called precision farming. And JDLink can save farmers money by using cellular technology that alerts Deere dealers about equipment problems before they become costly.

From March 2011 to March 2012, Deere says, customers ordered more than 7,800 different configurations of the 8R. On average, each configuration was built only 1.5 times. More than half the 8Rs were built just once, for a single customer. Thus, the global tractor: One size does not fit all, from Kansas to Kazakhstan.

In Brazil, a lack of good roads and other infrastructure can add as much as \$3 to the cost of producing a bushel of soybeans. So owners of large farms tend to focus on cost and performance, as opposed to the higher-end options that U.S. farmers crave, says Nevitt, who recently visited the country.

The Horitas especially liked the 8R's ability to adjust the level of horsepower depending on what the tractor is pulling, which conserves fuel. Even the paint job impressed them.

Heated Mirrors

"There is no way you can have a product with so much technology without a good finish," Horita says.

Sometime last year, a shipment of 8Rs left Waterloo bound for the Horita farm. A single machine probably would have cost more than \$200,000, but the Horitas got a deal because they bought in bulk. Some tractors came with two tires on the front and two pairs flanking the cab, with hundreds of pounds of ballast bolted to the rims so the tires won't slip in the sandy soil. There was little need, however, for the heated side mirrors a North Dakota grower might like.

From a twin-prop plane, the Bahia farmlands are a checkerboard of green, gold, and brown ribboned by rivers and red clay roads. The Horita farm stretches in all directions to the horizon. Bahia and states to the west and north, along with the more developed Mato Grosso further west, hold great potential for feeding the world.

Dormitory Housing

Even now, only the U.S. and the European Union rank ahead of Brazil in overall farm exports, says the U.S. Department of Agriculture. Brazil is the largest exporter of sugar, coffee, orange juice, soybeans, and poultry.

"We all need Brazil," says David Nelson, a global strategist for agricultural lender Rabobank International.

"Brazil is one of the few places where land can be put into production."

In the past decade the country has converted 32.5 million acres from pasture to cropland, and Deere expects it to bring an additional 49 million into production over the next 10 years. While most farms remain small, newer ones in Bahia and bordering states are so large and so far from towns that growers must house and feed hired help. The Horitas maintain dormitory-style housing, playgrounds, and soccer fields for hundreds of workers.

Deere entered Brazil by buying a 20 percent stake in a local machinery maker in 1979. It bought the rest of that company in 1999 and established John Deere Brazil. In the 2000s its new cotton-pickers with automatic baling mechanisms became big sellers. Only recently has its tractor business started to take off. Agco's tractor share in Brazil fell to 50 percent last year from 64 percent in 2005 as Deere's rose to 20 percent from 9 percent.

'Tougher Times'

"They are giving us some tougher times for sure," says Andre Carioba, Agco's senior vice president and general manager for South America.

The Horitas' dealer, Oliveira, says his business has more than doubled, on average, each year since 2001. Last year he counted revenue of nearly \$180 million at five outlets and sold 441 tractors, up from 221 in 2010. At his dealership in the town of Luis Eduardo Magalhaes, the burly, jovial Oliveira, who goes by "Chico," ushers visitors into a cavernous garage where mechanics are working on two Deere tractors.

"If there is a broken machine, either we send another or we take an engine from another machine and give them that," he says. This is where the Horitas' new 8Rs arrived from Waterloo.

Soybean Crop

Deere had just posted \$100 million in annual revenue for the first time when Kitaru Horita and his family boarded a boat from Japan to Brazil in 1938. They planned to farm, which was apt, since their surname translates to “dig the land.” They eventually bought property in Bahia. Their first soybean crop yielded about 12 bushels per acre.

“Today, when we have below 55 bushels per acre, we are sad, really,” says Walter Horita, Wilson’s 49-year-old brother and Kitaru’s grandson.

The Horitas’ average yield is 180 bushels per acre of corn and 57 bushels per acre of soybeans -- both higher than the average 2012 U.S. yields forecast by the U.S. Department of Agriculture. The Horitas expect revenue of \$175 million this year from their six Bahia farming units. They sell soybeans and corn to Cargill Inc. and other processors; cotton goes to Asia.

Single Supplier

A whitewashed main building at one production unit sits amid palm and ficus trees and looks like a resort hotel.

Eucalyptus windbreaks line a private airstrip where the Deere plane landed. A black Mercedes-Benz SUV stands on a gravel driveway, its tires striped red with the dust of the fields. A few feet away gleams an 8270R tractor, all cleaned up for the U.S. visitors.

Five years ago the Horitas’ fleet was dominated by Case tractors. Like other Brazilians, the Horitas balked at buying Deere because its prices were higher.

“Nobody wants to pay more,” says Paulo Herrmann, Deere’s director of agricultural sales for Latin America.

But “there’s a difference between price and value,” Walter Horita says. “If you have a machine that can harvest more hectares a day, you are reducing cost.”

At a trade show a few years ago, Herrmann offered Horita a deal: If he tried a Deere sprayer and didn’t like it, Deere would buy it back. A year later, Horita bought some tractors.

Then planters and more sprayers. The family has bought 62 8Rs and will probably buy more.

Some growers might say it’s risky to depend on a single supplier, that today’s friendly equipment dealer could someday jack up prices. Horita says he’s not worried about Deere: “They don’t want to lose a customer like us.”

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