



Turning the Key: Chinese Machines are the MST's Bet to Feed Brazil (Part II)

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The stump field



Asked if he would exchange the stump field for machines, Juca replied no. But his wife, Maria Helena, without blinking, replied yes. Photo: Ingrid Barros / O Joio e O Trigo.

The traditional way of planting rice is known as “roça do toco”. It is an agricultural system with roots in indigenous and quilombola communities where the forest is cut down, the combustion of organic materials, and the subsequent cultivation of rice, manioc, and maize utilising the released nutrients.

In the Cristina Alves settlement, there are many people who keep the tradition alive. Dijé herself, delighted about machines, accompanied her father to work since she was a child, being recognized as one of the most agile people in manual harvesting. Mother of five children, she claims that one of her girls is likewise good at things. “I have one that people say will be my copy because they like it, right? And this stump field of mine—she was the one who helped me plant it and the youngest one.”

Another settler who is truly enthusiastic about the stump farm is Juca, or, according to his birth certificate, Geraldo de Matos Barbosa, a 56-year-old farmer who exudes friendliness. When showing the area where he produces rice and cassava, he detailed the planting step by step. “Sometimes we can sell. It’s not much, but it works. But what we really like is eating.”



Geraldo de Matos Barbosa, farmer.

“We brush with sickles, ‘knock down’ with axes, then set it on fire. After 60 or 70 days, since it [the foliage] is already dry, we burn it. And, after it burns, we will add the so-called scrawl or coivara, which is the rest that the fire leaves, he taught.

If the logic is to cut down a little of the forest each harvest, it is also true that, in the stump field, the land used rests for years. Until the forest grows and the area is ready to be managed again.

Juca’s rice was almost ready to be harvested at the beginning of May. He presented the instruments he would use. Basically, a machete and a straw basket hanging over his shoulder.



Juca, proud of tradition, shows the “enchó,” used to cut rice, and the straw basket where the bunches are stored. Photos: Ingrid Barros / O Joio e O Trigo.

He calculated that the field would yield around 25 bags of rice. Far from being enough to sell, but enough for the family to eat almost all year round. “So, we don’t like selling because it’s very tasty rice. If we sell, then we won’t reach next year. Sometimes we can sell. It’s not much, but it works. But what we really like is eating.”

But, if the objective is to live off the income from rice, to scale up the operation, the farmers will be interviewed by Tares in Maranhão; they believe that the solution is mechanization. Especially because objective conditions have changed. In terms of available land, education, and even rural succession.

Big changes



“When the forest was still standing, we were able to make the stump field. But it was a collective area. You had large areas that you could cut down, cut down, set on fire, and plant. It changed, leaving that area at rest, and it regenerated over time. Today, the settlement has already been divided; everyone has their share,” explained Lucas Machado, a farmer from the Diamante Negro Jutaí settlement. There, the lots are 30 hectares, ten of which are legal reserves. “Our alternative was to mechanize.”

This certainty came after a long journey. Despite having fought to conquer the land for years under canvas, Lucas' parents did not want him to take the path to the farm. Pioneers in the occupation that would lead to the creation of the settlement, they wanted the firstborn to follow another path in life. “The area of information technology, the area of education. My family didn't want me to choose agriculture because it was unyielding. Never having obtained income directly from agriculture,” he said, a little confused.

At age 32, he was about to become a father for the first time. His partner, Maria Thaís, had a cesarean section scheduled for the following day, May 7th. A little more excited after a few seconds of silence, Lucas concluded, “I graduated here, and I still continue today. I have no expectation of moving anywhere. [I want] to continue living here.”



Maria Thaís and Lucas in the backyard. The next day, the young couple's first daughter would be born.
Photo: Ingrid Barros / O Joio e O Trigo.



Much of this has to do with disobedience. In 2015, Lucas jumped at the chance to go to college through Pronera, the National Agrarian Reform Education Program, aimed at qualifying youth in the countryside. He chose agronomy.

I put everything I learned in the course into practice in the family batch. I had a goal in mind. “Coming here and showing that we, within the settlement, can produce even if we were a large farmer. That the settlement also has this potential.” Knowing the settlement’s aptitude for rice production, he wanted to delve deeper into the study of mechanized culture.

The traditional way of planting rice is quite different from mechanized farming, starting with soil preparation. To plow and level the land, a tractor is used. To fertilize, chemical fertilizers, such as urea, or natural fertilizers, such as tanned cow urine, are used. The seed needs to be purchased; the variety used today in the settlement is BRS 502, developed by Embrapa, the Brazilian Agricultural Research Company.

Then comes the work of taking care of the plants. If you choose not to use pesticides, as required by agroecology, the farmer needs to stay directly in the field for about three months to control the plants that could compete for nutrients with the rice.



Rice at the harvest point in Railson Sousa Lima’s batch Photo: Ingrid Barros / O Joio e O Trigo.



At harvest time, harvesters like Shineray can come in. And finally, the time has come to benefit.

In the rice production chain, one machine pulls the other. This is because, to produce at scale and sell, there are certain market requirements to be met. The grain needs to be long and thin. Broken rice is not valued, hence the classifier.

The dryer, for example, is a machine that is of no use to those who plant on the stump, because the person harvests the rice from the bunch. And, as this bunch protects from humidity, you can store it in a simple magazine that can be your own front door.

It's quite new. Mechanization in settlements is an open process, with experiments that sometimes go wrong.

This is what happened with the BRS 502 seed in the case of the Cristina Alves settlement. "The variety gave a very good performance in Diamante Negro Jutaí," said Elias Araújo. "But here it showed a germination percentage much lower, something around 20%. So he compromised; farming became unfeasible."

So, even with Chinese machines available, Cristina Alves ran out of rice to harvest and had to make do with stocks from past harvests.

Another devastating factor also weighed in: the climate emergency. The rains, which were supposed to start in January in the region, were delayed by a month. "And we will have to learn to live with this; this factor in agriculture will be permanent now," lamented Elias.



Elias shows an area he had planted in January with rice that didn't grow. In May, his batch was already grown with beans. In detail, a grain of beans. Photos: Ingrid Barros / O Joio e O Trigo.

Resumption of production.

All these changes to enter the market circuit end up, at first, being expensive. Having recently left university, Lucas decided to plant on his own. He was not alone: two other



settlers, also agronomists for Pronera-Simeão and Pedrinho, were already pursuing the idea. The kickoff for the three was the exchange with researchers from the State University of Maranhão (Uema), who were in the settlement every now and then studying the different layers of soil, and also with Embrapa.

“They wanted to transfer technology the way they plant it, not only to the settlement but also to other places in Maranhão. And then we received the technology transfer from Embrapa, teaching how to plant in conventional” mode, said Lucas. A package that involved not only the use of machines but also chemical fertilizers and pesticides. “Agronegocio.”

Being part of MST, however, the settlers wanted to adapt Embrapa’s teachings towards agroecological production. “The MST seeks a lot to train us in a more natural form of production; we have to try to go further,” summarized Lucas, who admitted that, if it weren’t for the political training given by the movement, they would probably have adopted Embrapa’s entire technological package without much questioning.

But the fact is that, with the results of the mechanized farm, Simeão, Pedrinho, and Lucas were encouraging more people from the Agricultural Production Cooperative of Producers of the Baixada Maranhense Microregion (Coopervid), based in the settlement. As José Wanderlei Silva, president of the cooperative, would explain, for some time things were at a standstill there. Many settlers lost faith in agriculture and went to do other things in life. “From three we went to five, then we went to ten farmers working on their own,” he recalled. In other words, without financing.

Production would soon be financed by Finapop, an investment platform created in 2020 by the MST, through which cooperatives can raise funds. But, according to Wanderlei, the financing system had requirements that were difficult to meet at the refounding stage in which the cooperative found itself.

“It’s an excellent fund, this feature issue, but it was still very limited for us because it required the issue of professional qualification and technical assistance, which the fund didn’t cover, so we had some problems doing the renewal,” he said.

Public financing was also not a solution. “Apart from Finapop, we couldn’t get financing from a bank or a financial institution to come and say, ‘Look, I want to finance a hectare of rice.’ The excuse was that there is no payment capacity.” And then came Vale.

Project financed by Vale



Lucas looks in the direction of his father's lot while the Vale train, traveling the Carajás-São Luís route, passes under a bridge built in the settlement. Photo: Ingrid Barros / O Joio e O Trigo.

The Diamante Negro Jutaí Settlement is a place full of symbolism, as it is the result of the first occupation of the landless movement in Baixada Maranhense, in 1989. A region where there is a stronger presence of agribusiness. Bordering BR 222—a typical agro highway, full of potholes and full of trucks, which connects Marabá, in Pará, to Fortaleza—the settlement is also crossed from the inside by another important export route for commodities: the Carajás Railway, operated by Vale.

To give you an idea of the size of this operation, in February 2025, the mining company announced an investment of R\$70 billion to achieve the following goal: extract 200 million tons of iron ore annually from Carajás, which should become a reality in 2030.

According to settlers who preferred to remain anonymous, after years of acting in a spirit of divide and conquer (playing the settlement's association against the cooperative—and vice versa), the mining company recently changed tactics. The image a fountain used is that of a boa constrictor. Which gets tangled up, climbing onto the prey's body, and squeezing.



Vale meeting with members, at Coopervid headquarters, about the rice processing industry. Photo: Ingrid Barros / O Joio e O Trigo.

But the fact is that Vale arrived at the cooperative and asked what plans there were. “Vale embraced a dream of ours, which is a dream of farmers to plant rice in an improved condition,” said Wanderlei, wearing a shirt that, on the front, read “Projeto Arroz Diamante” and, on the back, had the logo of the mining company and Coopervid.

But Vale wasn’t just in the shirt. Two company advisors were there on May 5th, when the Tares he was received at the cooperative’s headquarters. About half an hour after the report arrived, they decided to hold a meeting with the settlers about a rice processing plant, which the mining company will finance as part of the Arroz Diamante Project.

Wanderley joined the MST in 1992, when he joined one of the movement’s occupations. He ended up in the Diamante Negro Jutaí settlement years later as coordinator of Pronera courses. As president of the cooperative, he is in a tight spot: he cannot spit on the hand that finances rice production, but he also, little by little, does not fail to admit that the situation is strange.



Trying to rebuild the cooperative in a complex context, Wanderley defends the Arroz Diamante Project but admits that it is something “tiny” given Vale’s impacts. Photo: Ingrid Barros / O Joio e O Trigo.

“The Diamante Negro Jutá settlement is an area impacted by Vale. And for 33 years we had been trying to work on this. [The mining company is] always slipping away. We had some achievements, but [everything] was very punctual,” he reflected, adding, “Vale has a goal, and, within this issue, it is obliged to do its social part. What is the social part? It’s this tiny—these tiny—thing that is the Diamond Rice Project. This is very small for her in relation to her gain and in relation to the impact on the settlement. This is very clear to us.

Next steps

If in different territories, circumstances vary greatly and, in some cases, are quite challenging in the end; the settlements in Maranhão selected to test Chinese machines pursue the same political orientation: producing agroecological food on a large scale.

In May 2025, a second partnership document with China was signed. This time involving the Ministry of Agrarian Development and Family Farming (MDA). The new phase involves testing another 50 machines in MST settlements and also at the University of Brasília (UnB). There, the Brazil-China Center for Research, Development, and Promotion of Technology and Mechanization for Family Farming was created, which will also



dedicate itself to the study of bioinputs and digitalization technologies. “It’s not just the issue of mechanization,” explains Luiz Zarref.

In parallel, the MST tries to establish factories to produce these small and cheap machines in Brazil. Originally, the movement thought it would be possible to attract Chinese capital directly, because some of the companies that produce the machines in China are installed in the country, but they produce other things like motorcycles, such as Shineray itself.

But without a specific policy that guarantees a market for companies, it was not possible. “Not having a more consistent mechanization policy for family farming ends up inhibiting companies from taking the initiative to come to Brazil, which is a distant market, and establishing an industrial plant that produces machines for this agriculture. Because since there’s no policy for it, these machines will probably get stranded,” says Zarref.

Now, plans have changed slightly. It involves triangulations with public authorities, national capital, and MST cooperatives. “So, we are, at this moment, in dialogues with Chinese companies to try to find ways that are possible to create either joint ventures or technological partnerships,” says the coordinator of Baobab and member of the MST.

It would work more or less like this: the Chinese company transfers the technology. And the MST cooperative, supported by public and private investments, produces the machines.

“Via public-private and popular partnership. The movement’s cooperative comes together and has participation, but it is important that it has a public resource in this and that it has an investor available for this. So, until these three things converge, there will be no industry in Brazil,” maintains Elias Araújo.

In Maricá, Rio de Janeiro, something along these lines is already underway—also the result of coordination with Baobab and the MST. In July 2025, the city hall signed a memo with the Chinese company Sinomach Digital Technology and the Brazilian company OZ. Earth. The plan is to install agricultural machinery factories for family farming and develop digital platforms for machinery management.

The city of Rio de Janeiro, in Elias’ opinion, is an example that changing the reality of mechanization in Brazil is not a distant ideal. “The machinery industry in Maricá will start now. Without adequate machines, without adequate industries, you don’t have an agroecology on the scale we are demanding.”



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