

# Cattle muddy Brazil's path to sustainable farming

High-tech agribusinesses cut down on chemicals while unscrupulous ranchers cut down trees

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Three years ago, SLC Agrícola took a punt on a technology that integrated infrared cameras into its machinery for spraying herbicide on its vast soya, cotton and corn plantations.

Immediately, the results were clear. The cameras were able to detect weeds, which could then be killed with a precision dose of herbicide, eliminating the need for the kind of mass spraying that is ubiquitous in large-scale agriculture. With the new technology, the company's use of herbicide dropped 85 per cent, reducing costs and making its products more appealing to consumers.

"It is a very efficient way to save chemicals, but more importantly to apply those chemicals only where they are needed — to apply directly," says Aurélio Pavinato, SLC's chief executive.

"We started with one machine, then two years ago we bought two more and then another 10. All our farms now have this machinery."

SLC is today recognised as one of the leaders in sustainability in Brazil's agribusiness sector — a bulwark of the economy that has grown in size and stature in recent years thanks to soaring demand for its products, notably from China.



Soya seedlings cultivated by SLC, which uses weed-detecting cameras to minimise herbicide use © Ricardo Lisboa, for the FT

Farming already accounts for 22 per cent of the Brazilian economy and seems poised for an even brighter future, with demand for food forecast to soar as the global population pushes towards [10bn by 2050](#), according to UN estimates.

The production of soyabeans — used for a variety of oils as well as for animal feed — surpassed 130m tonnes this year, up from 75m tonnes 10 years ago. In the same period, corn production almost doubled to reach 105m tonnes, according to official data.

Brazil's agribusiness companies, however, are viewed with suspicion by the international community because of the sector's historical links to deforestation in fragile biomes, such as the Amazon and the Cerrado savannah, which adjoins the south and east of the rainforest.

## Natural wealth

Biomes mentioned in this special report



Today, attention is focused on Brazil's big meat producers — companies such as JBS and Marfrig, which are regularly accused of failing to keep their supply chains free from cattle raised on deforested lands. Soya producers, too, have been lambasted by environmentalists for clearing land in order to grow crops.

## A wide field

The reality, however, is complex. Brazil is the world's largest producer of many commodities, including sugar, coffee and orange juice, which are not closely associated with the deforestation that is currently afflicting the country. Even the meat and soya producers encompass a broad spectrum,

from big companies like SLC that recognise the economic potential of sustainable agriculture to small farmers whose lack of access to technology and resources often results in more destructive land use.

"There is no such thing as a monolithic agribusiness sector in Brazil. It doesn't exist," says Juan Carlos Castilla-Rubio, the chairman of Space Time Ventures, a São Paulo-based group focused on developing artificial intelligence and robotics technologies for agriculture. "There is the bad segment, mostly in livestock and ranching. Then there is a sector in the middle ground in terms of sustainability, which is trying to do its best to respect laws but they are not in a transformation. And then there is the advanced sector, which realises that a new revolution is required."

***We don't need to cut a single tree [or] to use the Amazon to export more. We have the technology***

***Celso Moretti,  
Embrapa***

For Mr Castilla-Rubio, SLC fits into the last group. It has joined forces with Space Time Ventures to develop the camera technology to a point where autonomous robots could be used to detect the weeds and drones sent to kill them.

Celso Moretti, the president of Embrapa — a government-run agricultural research group — says Brazil's advances in sustainable agriculture have been undermined by poor communication with the outside world.

It is a common refrain among executives in the industry, who fret that their willingness to adopt new technologies is being overshadowed on the world stage by the rhetoric of President Jair Bolsonaro, who regularly makes overtures to the small cattle farmers and gold miners who cause much of the country's deforestation.

## Recommended



"We are not doing a good job of telling the world the things we are doing the right way, which is producing with technology and without cutting down forests," says Mr Moretti, adding that illegal deforestation needs to be tackled via enforcement at the federal level.

"We don't need to cut a single tree. We don't have to use the Amazon to export more or feed the world. We have the technology."

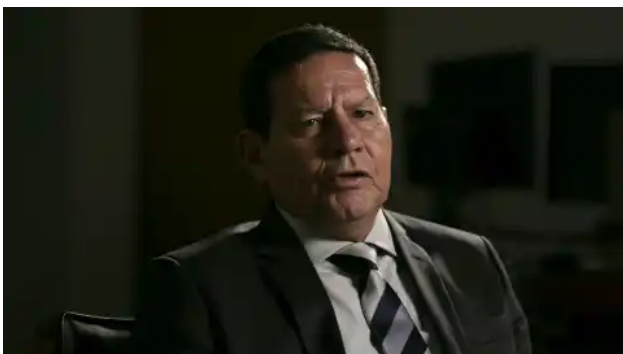
## Superior soil

Much of this technology is focused on improving soil quality to increase yields and the sustainability of the land. The 204m-hectare Cerrado was once considered unsuitable for growing crops, but is now the heartland of Brazil's soya and cotton production as a result of efforts to reduce the soil's acidity and naturally occurring aluminium content.

Some larger producers have also begun [no-till farming](#), which reduces carbon emissions and maintains the quality of the soil for a longer period.

"With no till, we are able to protect organic matter in the soil. And if you have good crop rotation, the soil can recover to the same level as in nature," Mr Pavinato says.

## Recommended



Another important development has been the cultivation of crops to suit Brazil's tropical climate. Mr Moretti points out that soyabeans are originally from China, but were brought to Brazil via the US and then genetically modified to flourish in the local climate.

"The fact is in Brazil, we have areas that we crop twice or three times a year," he says. "We use around 65m hectares of land to produce 257m tonnes of grain and 67m tonnes of fruit and vegetables. And we have another 50m hectares of degraded pasture that we can incorporate in our production matrix, so we can double production of food and fibre without cutting down trees."

## **Trouble with cowboys**

The fly in the ointment, however, remains the cattle industry — both for its links to deforestation and its emissions of methane, a greenhouse gas produced as cattle digest their food.

Under pressure from international investors as well as purchasers in Europe, Brazil's big meat companies are rushing to implement protocols to ensure that their supply chains are free from cattle raised on deforested lands.

***The biggest challenge we have in Brazil is to control and to trace the whole supply chain***

***Paulo Pianez, Marfrig***

But a clear problem remains with the tens of thousands of indirect suppliers — ranchers who provide cattle to the companies' direct suppliers — who often live in remote areas, far removed from the purview of the likes of JBS and Marfrig. Unlike the soyabean industry, which uses fixed

contracts, cattle sales operate on a spot market: purchasing is piecemeal, to reflect shifting consumer demand, and ranchers can easily sell to smaller, more unscrupulous operators if the big meat companies' demands become too onerous.

"The biggest challenge we have in Brazil is to control and to trace the

whole supply chain. Why is this so difficult? We have more than 2.5m producers," says Paulo Pianez, sustainability director of Marfrig.

"How can we access the [indirect suppliers]? If I put too much pressure on my direct supplier for this information, they are going to simply sell to another person."

Both JBS and Marfrig are adopting what they call an "inclusive" approach, offering support to their supply chain to help producers make better use of their land so that deforestation is unnecessary. They are also using technology such as blockchain to track the life cycle of cattle, as well as satellites to look out for deforestation among suppliers.

Few environmentalists, however, have been convinced, and JBS in particular has been accused of moving too slowly on the issue.

But Mr Pianez makes the point that any solution does not lie just in the meat companies' hands.

"What we need is the government to implement regulations, meatpackers to all have the same policy system, retailers to only buy meat from meatpackers with these criteria, and investors and banks to provide conditions for producers to have the necessary resources," he says.

"We believe that only this way can we change the livestock reality in Brazil."