

Science & technology | Magic money trees

Deforestation is costing Brazilian farmers millions

Without trees to circulate moisture, the land is getting hotter and drier



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DECADES OF INCREASING maize and soyabean production have turned Brazil into an agricultural powerhouse. They have also led to the destruction of vast swathes of the [Amazon rainforest](#). That has long put farmers and environmentalists at loggerheads. But a study released in October by the Federal University of Minas Gerais (UFMG) and Rainforest Foundation Norway (RFN) shows the extent to which deforestation is hurting farmers too.

The report shows that the practice of clear-cutting (removing all trees from a given area) in the Brazilian Amazon led to reduced crop yields, resulting in total economic losses of around \$1bn between 2006 and 2019. After accounting for production costs, the net revenues for soyabeans dropped by 10% over that time, while maize revenues dropped by 20%. Beyond the balance-sheet, Anders Krogh, a specialist forest adviser at RFN, says these findings demonstrate the danger deforestation poses to global food security.

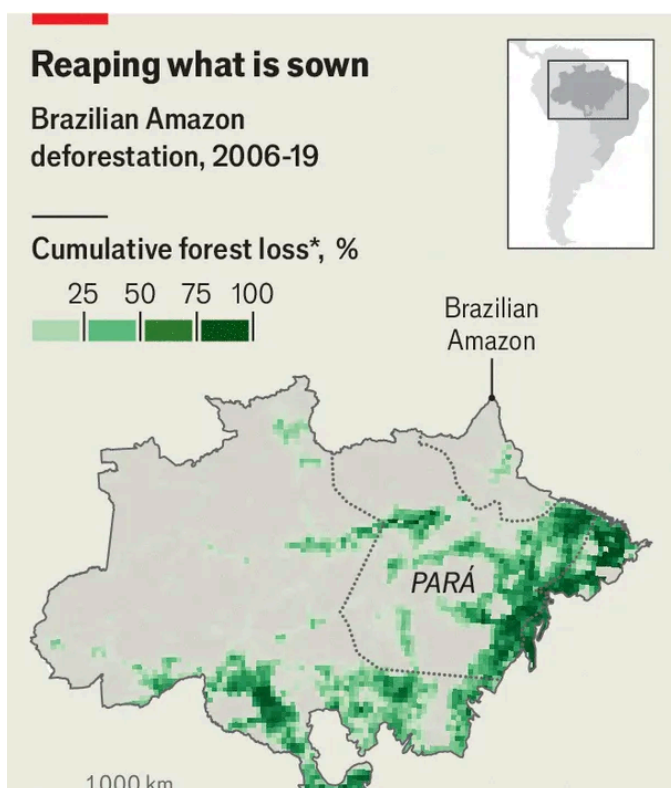
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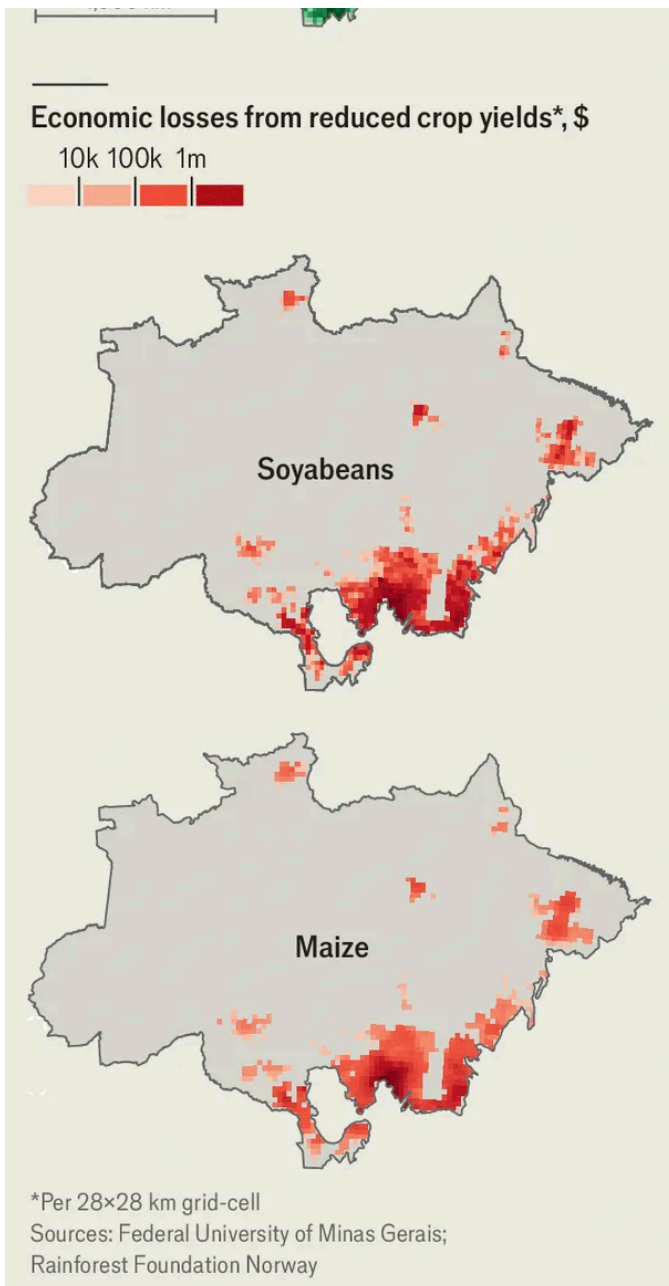
When ancient forests become rolling plains, a delicate balance of water cycles is disrupted. As trees respire, they convert water into vapour, which goes on to form large, dense rain clouds, and has a cooling effect on the region. This moisture-recycling process also influences atmospheric circulation, which plays a key role in temperature regulation in the Amazon basin.

The effects are starkest in the most deforested regions. In areas where more than 80% of the forest has been cleared, the onset of the rainy season has been delayed by 76 days since 1980. Between 1999 and 2019, rainfall in these same areas fell by 40% in the soyabean-cropping season and 23% at maize-cropping time. Maximum air temperatures increased by approximately 2.5°C over the same period (from 30°C to 32.5°C). Less rain and hotter days mean smaller harvests and smaller revenues.



Preventing further deforestation in Brazil's southern Amazon could slow the trend. If clear-cutting continues apace, farmers of all stripes (including cattle ranchers) are expected to face even harsher conditions. One estimate says that by 2050 they will be losing up to \$1bn a year.

Reforestation could even reverse rainfall trends: the report concludes that if the Brazilian state of Pará (a hub of intensive agriculture) were to reforest 55 000km² of arable land



deforest 33,000km² of native land, the rain could come on average five days earlier, and up to 19 in some areas. In the most deforested areas, that should bring 152mm more precipitation each year.

MAP: THE ECONOMIST

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For now, though, that seems like a tall order. Agricultural firms in Brazil tend to treat such reports, and the researchers who produce them, with scepticism. The term “agri-phobic” is often used to describe scientists who criticise the country’s farming practices. Suspicion is felt at the grassroots level too. Despite the increasing costs of adapting to drier conditions, Brazilian farmers dispute claims that lower yields result from climate change or deforestation.

Britaldo Soares-Filho, a researcher at UFMG and the report's lead author, hopes that focusing on the financial impact of deforestation, rather than abstract modelling, can bring critics round. Sustainable farming practices, he contends, are in the economic interests of agribusiness. "They say we're guilty of agri-phobia," he says, "but they're committing agri-suicide." ■

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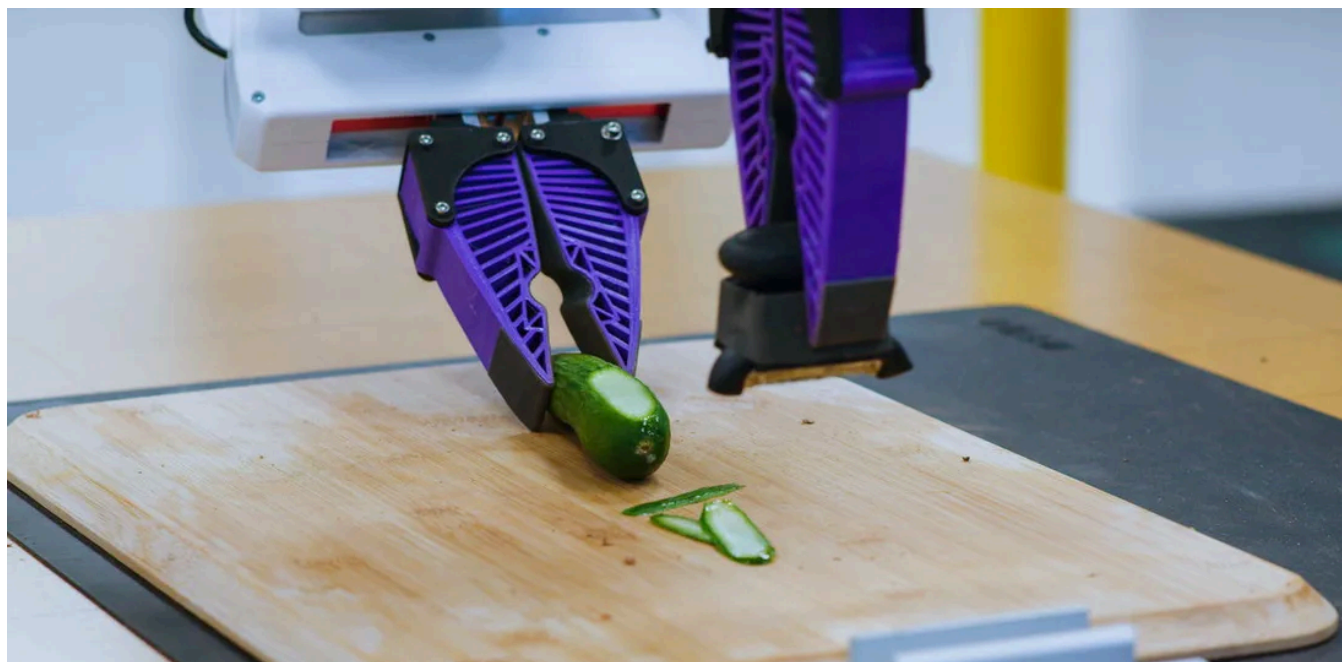
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