



As US cornfields withered in drought conditions last summer, Brazil's once empty Cerrado region produced a bumper crop of the grain, helping feed livestock on US farms and ease a drought-related spike in prices.

US imports of Brazilian corn were small by world standards. But they are rising fast, and they mark just one element of the increasingly complex and sometimes contentious relations between the world's agricultural superpower and its fast-growing competitor amid shifts in the global economy.

Starting at zero in 2010, Brazilian corn exports to the US are on pace to exceed \$10m this year and are bound to rise as farmers expand planting and more corn is funnelled to nonfood uses, such as ethanol production. Brazil is expected next year to dethrone the US as the world's largest producer of soybeans. With so much land available for cultivation, that status will probably become permanent.

With a heavy dose of US capital and know-how, a massive agribusiness complex has been established in Brazil. Just as US firms have moved production to China to be close to potential consumers, the John Deere equipment trundling across Brazilian fields and the Kellogg's Corn Flakes found in Brazilian supermarkets come from local factories.

Despite what is described as intense co-operation between the two governments, there is a developing sense of competition as well. Brazil challenged US cotton programmes in the World Trade Organisation in 2009, arguing that US government support for domestic growers held down world prices and hurt Brazil's cotton farmers.

Brazil won, and it now receives about \$17m in monthly payments from US taxpayers as a result – money being used to advance the Brazilian cotton industry with research on best practices, pest management and other issues. The Obama administration agreed to the payments as an alternative to either curbing government support for US cotton growers or having Brazil slap import taxes on US goods to compensate for the loss to its farmers.

Battles over sugar, poultry and other products that are grown in plenty here were among issues that stalled the Doha round of world trade talks.

"We will surpass the US in the future", as Brazil brings massive reserves of open land into production and benefits from still untapped potential to boost its yield per hectare, said Ronaldo Spirlandelli de Oliveira, head of the São Paulo cotton growers association. The São Paulo group recently received \$500,000 in US funds to train technicians in pest management. Under the cotton agreement with the US, the money can't go directly to growers but is being funnelled through a new agency to fund research, technical training and other programmes for Brazil's cotton industry.

The cotton case is just one example of the impact Brazil is making on global agricultural markets. State-backed research since the 1970s has turned the Cerrado – once considered unproductive scrubland – into a vast new farm belt. Still mostly unplanted, and comfortably distant from Brazil's environmentally sensitive Amazon region, the Cerrado has become a new frontier in the green revolution that made US farmers the most productive in the world. Just as the vast plains of the American midwest helped keep down world food prices for the last half of the 20th century, the Cerrado may do the same in the 21st.

Brazil has adapted the soybean – native to the temperate areas of China – to make it thrive in tropical conditions, and it has invested heavily in the application of nutrients needed to make the Cerrado productive. Already Brazil's output is critical to world supply. The boatloads of soybeans shipped from Brazil to China are central to feeding the world's largest country at a time when it is becoming richer and consuming more per person.

The corporations that defined America as a land of plenty have invested heavily in Brazil. Grocery shelves are stocked with iconic US brands such as Mazola oil and Corn Flakes, manufactured at local plants where Cargill, Kellogg's and other staple midwestern companies employ thousands of Brazilians. Of seven new factories John Deere said it plans to build worldwide, two are in Brazil – with three in China and one each in India and Russia.

"It is a tricky issue," said a US official who spoke on condition of anonymity because he was not authorised to speak publicly. "US companies are doing all this investment in an agriculture superpower that is a huge competitor ... Growers from the US are definitely watching what is happening down here."

Corn is a new part of the discussion.

Once reliant on imports, Brazil has seen its corn production explode in recent years. High world prices have enticed farmers into planting more, and crop management changes have allowed two plantings a year on Cerrado farms. Farmers increasingly use a faster-growing strain of soybean that can be planted in September – the start of spring in the southern hemisphere – and harvested in January. A second crop can then go in the ground and be ready by June. This year that second crop was corn, and the record planting was ready just as the effect of the US drought was becoming clear. A boon for Brazilian corn growers, it may spur more production.

Brazilian farmers remain focused on soybeans and the export potential to China. The country does not expect to displace the US as the world's top corn producer, said Elisio Contini, head of strategic studies at the Brazilian Agricultural Research Corp. But it does expect to play an increasing role in agriculture. Farmers say the major constraint – a notoriously slow and expensive transport network – can be fixed over time.

Compared with Brazil's unlocked potential, said Oliveira, the cotton farmer, "the US is at its limits".