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China's U-turn on Genetically Modified Organisms

Following a decade long of hesitation and reluctance to adopt genetically modified organisms (GMOs), the Chinese agricultural regulator recently revised a set of [regulations](#) for seed-makers to seek approval for GMOs, an indication that the country is about to reverse its previous stance on the commercialisation of GMOs.

Since the U.S. FDA approved the world's first genetically modified tomato "FlavrSavr" for commercial sale in 1994, the cultivation of GMOs has been widely adopted in food-producing countries such as the United States, Brazil and Argentina on large scale. Even though China has been importing a significant amount of GMOs from these countries, its own adoption of GMOs took a very different route during the past decade. Similar to China, European Union countries are also more sceptical toward GMOs as 19 out of 27 member states voted to either partially or fully ban them. The only GMO currently grown in the EU is GM maize ("MON 810") largely found in Spain and Portugal.



Source: *The Economist* – May 2022

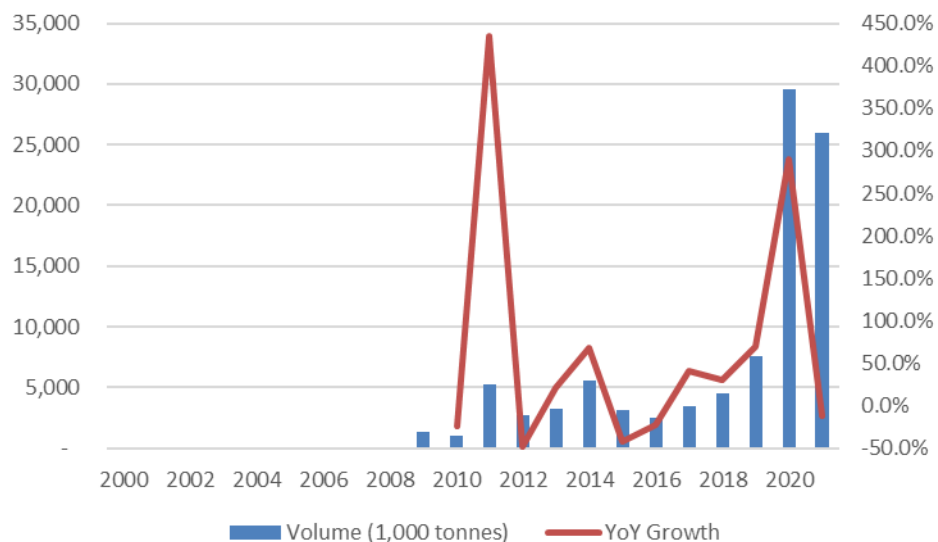
China's first attempt at GMOs took place in 2009 when the authorities granted biosafety certifications for genetically modified corn and rice. However, their commercial production certifications were never granted mainly due to a high level of resistance from both ordinary citizens and local agricultural scientists. This, unfortunately, happened at a time when Chinese people were highly concerned about food safety and about the Chinese government's competence in regulating the food industry. This was shortly after a series of nationwide food-safety scandals, the most shocking one having been, arguably, the notorious [milk scandal](#) that sickened 300,000 children and killed six babies in 2008.

As a [survey](#) conducted later in 2018 found out, only 12% of Chinese consumers had a positive view of GMOs. In this context, it is not surprising that the government decided to delay its GMO commercialisation process.

Over the past decade, Chinese officials had only approved the commercial cultivation of genetically modified cotton and papaya, the latter when illegal genetically modified papaya seeds became so dominant that the regulator was forced to legalise it. Other GMOs are either used in labs or exported.

The ongoing global [food supply chain crisis](#) induced by the Ukraine war and by climate change is certainly playing a role as it has triggered for the Chinese government a sense of urgency for food security, but only to a certain extent, in our opinion. China's U-turn on GMOs is indeed the result of a series of long-term, deliberate planning to address food security and keep its 1.4 billion people out of hunger. Its limited arable land per capita (equivalent to 1/5 of that of the United States), growing consumption, and previous decisions made to delay GMO adoption have pushed China to become even more dependent on foreign GMOs (as seen in the chart below) which are currently allowed for imports as long as they are processed into products such as animal feeds to support the country's surging demand for pork and other proteins.

China Corn Imports 2000-2021



Source: Bloomberg – May 2022

During the past two decades during which China evolved from being a net exporter to becoming a net importer of agricultural products, the country's overall food self-sufficiency significantly declined from 100% to 76% with soybeans seeing the largest drop from 60% to 17%.

Such increasing dependence on imported crops has worried leaders in Beijing. President Xi Jinping started to call for “keeping the rice bowls filled primarily with Chinese grains” as early as 2013. The rising geopolitical tension between the United States and China since the Trump administration no doubt served as another catalyst for Beijing to further advance its food self-sufficiency strategy.

China's growing interest in addressing food security with genetically modified crops was hinted at when ChemChina, a Chinese state-owned giant, acquired leading Swiss agrochemical company Syngenta for a blockbuster \$43 billion in 2017. Later in 2021, Chinese policymakers enshrined food security as a prioritised policy in its [14th Five Year Plan](#) and for the first time elevated the need to “strengthen the homegrown seed industry” in the blueprint that guides the country's agricultural sector. For all these reasons, GMOs became the only viable option on the table for Beijing to effectively boost total agricultural output on limited arable land. As a result of the policy transition, GMOs have

been touted by Chinese officials and media as the "[chips of agriculture](#)", paving the way for large-scale commercialisation by gradually improving people's perception of the topic.

As China's already-limited arable land has long been threatened by insects, the recently revised regulations focused on developing insect-resistant and herbicide-tolerant soybean and corn strains, designed to combat the fall armyworm moth (an invasive agricultural pest) and weeds in crop production. According to Shen Zhicheng, a professor at the Zhejiang University's School of Agriculture and Biotechnology, insect-resistant corn could increase yield by up to 10%, and by 15% to 20% in areas severely impacted by insects infestations. However, as the testing and approval process for genetically modified crops would still take at least five years to complete, solely relying on marginal yield improvement of new genetically modified crops to meet China's increasing demand in the short term is simply unrealistic.

It is also worth mentioning that due to the current [ban](#) on foreign investments in the Chinese GMO industry, existing international players such as Corteva and Bayer (which acquired the world's largest seed company Monsanto in 2018) are unlikely to play a role in the short term, and therefore the pace of mass adoption may not be as fast as one would expect.

Aside from regulatory approval, the success of GMO commercialisation in China also largely hinges on consumer acceptance, in which policymakers are expected to roll out further regulations regarding production, promotion and product labelling to keep the industry well-regulated. Given the current low consumer acceptance on the demand side and inexperience of the highly fragmented local agrochemical industry on the supply side, one shall not expect the commercialisation of genetically modified crops in China to be an easy and smooth path. But for sure China seems to be in the process of making a U-turn.

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