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Global GMO acreage remains stagnant

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In 2024, 209.8 million hectares of genetically modified crops were grown worldwide, representing 4.2% of global farmland. Beyond this relatively low percentage, it is also important to note that, for decades, genetically modified crops have been limited to just a few countries and four plant species. GMO proponents readily cite the Bt eggplant in Bangladesh, or African countries that have recently authorized transgenic cotton or cowpeas… But this optical illusion is a long-standing strategy designed to create the illusion of GMO success.



Sustainability Directory

Nothing new under the sun when it comes to GMOs… The area under cultivation continues to grow, but slowly. According to *GM Monitor*[i], it is projected to reach 209.80 million hectares (Mha) by 2024. In 2018, the figure was 186.86 Mha, representing a 12% increase over six years (approximately 2% per year). This is not surprising. Indeed, very few new countries have authorized commercial cultivation, and the few new genetically modified crops that have been approved are not widely embraced by the markets.

In other words, four countries - Brazil, the United States, Argentina and Canada - cultivate 85.2% (178.75 Mha) of the total area, and four crops - soybeans, corn, cotton, and canola - account for 99.2% of that. *GM Monitor* lists 28 countries growing GMOs, sometimes on a very marginal scale. Similarly, among more than a dozen other crops that have been authorized for commercial cultivation, some have never been grown to date. The other species - sugarbeet, alfalfa, eggplant, sugarcane, etc. - therefore account for less than 1% of global acreage. Yet they are often

highlighted to give the impression that plant biotechnology is thriving.

4.2% of agricultural land is used for GM crops

Few countries, few species, but above all, a small proportion of the world's agricultural land. According to the FAO, agricultural land (arable land and permanent pastures[ii]) covers 4.9 billion hectares. Transgenic crops account for only 4.2% of this total. Thus, on a global scale, the increase in GMO acreage between 2018 and 2024 is quite marginal. To be exhaustive, it should be included certain forests and savannas that contribute to food production in various countries[iii]. For example, in the Congo Basin, "*bush meat*" amounts to 4 to 5 million tons per year - equivalent to half of European beef production - accounting for 80% of the animal protein consumed in both rural and urban areas.

Year	Global GMO area (in Mha)	Year-on-year change
2018	186,9	
2019	186,4	-0,2%
2020	189,1	+1,4%
2021	196,2	+3,8%
2022	202,2	+3,3%
2023	202,9	+0,3%
2024	209,8	+3,4%

Annual change in the global area of land sown with GM crops (2018–2024).

In Brazil, GM soybeans and corn continue to expand

Over the 2018-2024 period, the increase in land area planted with transgenic GM crops is primarily driven by Brazil. In this country, the area planted increased by 20.92 million hectares between 2018 and 2024[iv]. Brazil is therefore responsible for 91.4% of the global increase over the past six years.

By far the largest contributor, the area planted with soybeans increased by 13.3 Mha between 2018 and 2024, accounting for 56% of the increase. Brazilian soybeans are almost entirely genetically modified to tolerate herbicides, and 60% of this production is exported to China. The new acreage was mainly planted in the Cerrado region[v]. In this region, soybean acreage rose from approximately 17.3 Mha in 2018[vi] to 23.8 Mha in 2023/24 (+6.5 Mha)[vii], accounting for about 50% of the global increase.

This expansion of cultivated land is linked to deforestation. According to Camila Santos of Fundação Solidaridad, "*between 2019/20 and 2022/23, 42% of soybean expansion in MATOPIBA occurred over native vegetation, corresponding to 920 thousand hectares, showing a significant increase in deforestation for conversion into agricultural areas. In addition, the average annual expansion rate in the most recent period reached 1.457 million hectares, a growth much higher than the averages observed in previous periods*"[viii].

The Matopiba region is the "*new agricultural frontier*"[ix] in the hands of agribusiness: the cultivation of these lands is accompanied by a major transformation of the landscape, villages turning into cities, road and rail infrastructure, etc.[x] The area under soybean cultivation is expected to continue increasing in these regions. However, this expansion is likely to be limited by a shortage of water[xi]. Pro-GMO advocates will therefore be able to celebrate a growing increase in transgenic acreage, even though this crop is harmful to the environment, actively contributing to deforestation and

feeding factory farms responsible for pandemics and other greenhouse gas emissions.

The area planted with non-GMO soybeans remains marginal, at less than 2 million hectares, and is primarily destined for the European market.

As for GMO corn, Brazil saw an increase of 7.13 million hectares between 2018 and 2024. This crop accounts for 30% of the overall increase. Brazilian corn is largely transgenic (over 95%). The increase in GMO corn acreage in Brazil is mainly due to the second harvest in the west-central regions (particularly in the state of Mato Grosso) and to the conversion of "*degraded pastures*" or the abandonment of sorghum cultivation in the Cerrado.

This second harvest, known as Safrinha (or "*small harvest*"), is driven by several factors. First, the selection of earlier-maturing soybean varieties (particularly Intacta RR2 hybrids) has allowed soybean planting to be shifted from December/January (harvest in late April) to October/November (harvest in February), making it possible to grow corn on these lands. Thus, in Mato Grosso, the total corn acreage increased from 11.2 Mha in 2018/2019[xii] to 14 Mha in 2023/2024 (+2.8 Mha, or +20%), with 90–95% of this increase attributable to the corn Safrinha. Mato Grosso has thus become the world's leading corn producer. Second, former areas used for extensive livestock farming, as well as sorghum and cotton cultivation, have been converted to corn. These conversions have mainly taken place in the Cerrado.

The third crop that has driven the growth of GM crops in Brazil is cotton. Here too, there was strong growth between 2018 and 2024 (from 1.64 million hectares to 1.94 million hectares, or +20.6%), with a GM adoption rate remaining stable at 99%. In this case as well, the possibility of growing cotton after soybeans partly explains this increase. The second factor explaining the increase in cotton acreage is the development of irrigation, particularly in Mato Grosso, starting in 2020.

Two other crops have been authorized for cultivation: eucalyptus (2015) and sugarcane (2017). For eucalyptus, no acreage has been recorded. As for transgenic sugarcane, the CTC 20 Bt variety (insect-resistant *via* the Bt Cry1Ab gene) was grown in 2018 on only 400 hectares (or 0.004% of the total sugarcane acreage). We have no data for subsequent years and can therefore infer that the areas remain limited. One reason is that the sugarcane borer *Diatraea saccharalis* exhibits strong resistance to the Cry1Ab toxin, and evolutionary changes are occurring more rapidly among insects in Brazil than in biotech companies… Furthermore, European markets remain reluctant to purchase sugar derived from genetically modified sugarcane. The importance of labeling should not be overlooked when it comes to the acceptance or rejection of a product derived from GMOs.

GMO crop	Cultivated area in 2018 (in Mha)	Cultivated area in 2024 (in Mha)	Changes in cultivated land area 2018–2024
Soybeans	32,34	45,69	+29 %
Corn	13,08	20,21	+35,3 %
Cotton	1,64	1,94	+20,6 %
TOTAL	**46,96**	**67,88**	**+30,8 %**

Changes in the area under cultivation for GM soybeans, corn and cotton in Brazil between 2018 and 2024.

Disappearance of GMO Crops in Mexico

Mexico has seen a drastic decline in the amount of land planted with GMOs. Genetically modified cotton was the only species authorized for cultivation there. However, according to the USDA, GMO cotton has virtually disappeared. The U.S. Department of Agriculture attributes this decline to

the lack of recently authorized GMO varieties: "*The only authorized genetically modified cotton seeds are obsolete varieties that are mostly unavailable on the global market. Producers report that only one genetically modified variety is currently available, and its limited adaptability to certain regions has led to lower yields for cotton growers*". The Mexican government is generally opposed to GMOs, as evidenced by the various decrees it has adopted. This explains why no new GM cotton varieties have been authorized since 2019.

In other countries in the Americas, the situation has generally remained unchanged. There has been a slight decline in Canada and a slight increase in Bolivia.

American countries that grow GMOs	Area under GM crops in 2018 (in Mha)	Area under GM crops in 2024 (in Mha)	Changes in the area of land cultivated with GM crops (in Mha)
USA	74,73	75,36	+0,63
Brazil	46,96	67,90	+20,94
Argentina	23,60	23,80	+0,20
Canada	12,15	11,66	-0,49
Paraguay	3,80	4,38	+0,58
Bolivia	1,36	1,80	+0,44
Uruguay	1,21	1,51	+0,30
Colombia	0,08	0,15	+0,07
Honduras	0,03	0,07	+0,04
Chili	0,01	0,01	0,00
Mexico	0,24	0,01	-0,23
TOTAL	**164,17**	**186,65**	**22,48**

Changes in the area of land cultivated with GMOs in the Americas between 2018 and 2024 (in Mha)

In Africa, new countries have adopted GMOs, but the acreage remains limited

In Africa, one country stands far ahead in terms of GM crop acreage: South Africa. Authorized as early as 1999, GMOs play a significant role there. Approximately 95% of the soybeans and cotton grown there are genetically modified. The situation has been generally stable since 2012, with significant fluctuations (notably a sharp decline in 2018, to just 2.52 million hectares). South Africa accounts for 94% of Africa's GMO acreage (3.47 million hectares out of 3.7 million hectares).

The second-largest African country in terms of GMO acreage is Sudan, where Bt cotton cultivation has stagnated for several years. This is explained by a fairly high adoption rate of GMO varieties (around 90%), according to the *AgbioInvestor GM Monitor* website (information that cannot be independently verified).

The latest development comes from the authorization of GMO crops in six African countries:

- Bt cotton in Ethiopia (2020), Kenya (2020), Malawi (2020), and Eswatini (2024);
- TELA corn in Kenya (2024);
- BT cowpea in Ghana (2024) and Nigeria (2018). In Ghana, the authorization of BT cowpea has not led to any cultivation.

Burkina Faso, for its part, abandoned Bt cotton in 2016.

African countries growing GMOs	Area under GM crops in 2018 (in Mha)	Area under GM crops in 2024 (in Mha)	Changes in the area of land cultivated with GM crops (in Mha)
Afrique du Sud	3,2	3,47	0,27
Soudan	0,17	0,2	0,03
Éthiopie	0	0,01	0,01
Kenya	0	0,01	0,01
Nigeria	0	0,004	0,004
Malawi	0	0,00225	0,00225
Total	**3,37**	**3,7**	**0,3**

Changes in the area of land cultivated with GMOs in African countries between 2018 and 2024 (in Mha)

In Asia, Bt cotton dominates while Bt eggplant is becoming scarce

India and China are the two Asian countries that have been growing Bt cotton for over a decade. Planting areas have remained generally stable. In India, there has been a slight decline in acreage over the 2018-2024 period (from 11.97 Mha to 11.21 Mha, or -6%), following a peak of 12.73 Mha in 2019. In China, Bt cotton acreage over the same period fell from 3.23 to 2.80 Mha. A new development in China is the introduction of GMO corn and soybean crops in 2023. By 2024, they account for 0.67 Mha and 0.04 Mha, respectively. These two new crops cause the total GMO acreage in China to increase between 2018 and 2024 (+0.28 Mha).

In contrast, GM corn appears to be establishing itself permanently in Vietnam. Authorized in 2015, it will account for nearly 50% of the national corn acreage (0.43 Mha) by 2024.

In Bangladesh, the Bt eggplant has lost its appeal. Approved in 2013, it was reportedly grown by 65,000 farmers (compared to 27,000 in 2018) on 6,400 hectares in 2021, according to *Transparenz Gentechnik*[xiii], a website that tends to be pro-GMO. The site provides context: "*They are grown on approximately 50,000 hectares by 150,000 small farmers for local markets*". However, by 2022, the area under cultivation had been reduced by more than half (to 2,800 ha) according to the USDA, representing 8.5% of the national cropland[xiv]. The USDA attributes this decline to a reduction in seed supply. The USDA notes that the Bangladeshi Ministry of Agriculture did not provide seeds in 2022–2023 due to a lack of funding. This area remained stable until 2024.

In this country, as likely in others, the Ministry of Agriculture subsidized the cultivation of Bt eggplant. The USDA writes that "*the Department of Agricultural Extension (DAE) encourages and helps farmers to cultivate Bt eggplant*". This includes, for example, free seeds and subsidized fertilizers. And USAID, in partnership with the seed company Mahyco, also provided financial and technical support to the government in establishing these crops.

The Philippines was also a country highlighted by GMO proponents because it had approved a Bt eggplant, as well as Golden Rice, a genetically modified rice variety engineered to be richer in beta-carotene (a severe deficiency in beta-carotene can lead to blindness). However, in April 2024, the Philippine Supreme Court suspended these two authorizations and required new risk assessments. In this country, the cultivation of transgenic corn remains significant: 0.71 million hectares in 2024, representing 27.8% of the national cropland. It should be noted, however, that

this area has remained stagnant since 2012 (0.69 million hectares).

Asian countries growing GMOs	Area under GM crops in 2018 (in Mha)	Area under GM crops in 2024 (in Mha)	Changes in the area of land cultivated with GM crops (in Mha)
India	11,97	11,21	-0,76
China	3,23	3,51	+0,28
Pakistan	2,19	1,9	-0,29
Philippines	0,56	0,71	+0,15
Vietnam	0,04	0,43	+0,39
Myanmar	0,18	0,19	+0,01
Indonesia	0	0,02	+0,02
Bangladesh	0,0029	0,0015	-0,0014
TOTAL	**18,1729**	**17,9715**	**-0,2014**

Changes in the area of land cultivated with GMOs in Asian countries between 2018 and 2024 (in Mha)

Australia lifts moratoriums, and GMO crops surge

Finally, in Oceania, the only country that grows GMOs is Australia. We are seeing a sharp increase in acreage, rising from 1 million hectares in 2018 to 1.41 million hectares in 2024. GM rapeseed accounts for approximately 46%[xv] of the total acreage, while GM cotton accounts for 99%. Australia also grows 0.08 million hectares of glyphosate-tolerant GM safflower, intended for the production of edible oil or biofuels. The country also authorized GM Indian mustard in October 2022 and GM bananas in February 2024, but no commercial cultivation has yet been reported.

The key development is the gradual lifting of moratoriums. Tasmania is the only Australian state to have maintained a moratorium on genetically modified crops.

The situation regarding genetically modified (GM) crops is therefore stable, with the exception of Brazil where soybean cultivation continues to expand, often at the expense of forests or by combining two crops (soybeans and corn or soybeans and cotton) on the same land. Soybeans are grown with heavy use of fertilizers and pesticides. It is a generally very polluting crop, which promotes the concentration of land ownership in the hands of capital. To celebrate an increase in GM acreage in newly established African countries, as some proponents of this technology sometimes do, is to deny reality. GM crops consist of four varieties cultivated in a few countries and intended for livestock feed and biofuels (corn, soybeans, rapeseed) or for textile production (cotton). They are not food crops and are not adopted by small farmers, with the exception of cotton in India and China, often due to the inability to obtain conventional cotton seeds. Genetically modified organisms (GMOs) produced using new genomic techniques (NGTs) are not cultivated on a large scale, and the few varieties actually grown are not those promoted by seed companies. According to the German NGO ENGA, of the three GMOs/NGTs cultivated worldwide, two are herbicide-tolerant (HTV) corn varieties that produce insecticides sold by Corteva. Furthermore, the first two GMOs/NGTs to be marketed - a GMO rapeseed from Cibus and a GMO soybean from Calyxt - were withdrawn from market[xvi].

i AgbioInvestor, « Global GM Crop Area Review », April 2025.

[ii] Most calculations of this ratio (GMOs/agricultural land) fail to take permanent grassland into account. However, GMOs are mainly used to feed livestock, just as permanent grassland does very effectively. If we compare GMOs to arable land (1.55 billion hectares), the ratio jumps to 13.5%.

[iii] FAO, « FORESTS FOR IMPROVED NUTRITION AND FOOD SECURITY », 2011.

[iv] AgbioInvestor, « AgbioInvestor GM Monitor », 2026.

[v] These include, in particular, Matopiba, an acronym for the states of MAranhão, TOcantins, PIauí and BAhia.

[vi] The Cerrado accounted for 48% of Brazil's soya production as early as 2019 (Soterroni, 2019) and, with approximately 36 million hectares of soya in Brazil in 2018, this would amount to around 17.3 million hectares in the Cerrado.

[vii] Serasa Experian S.A., « Agribusiness. Soy expansion dynamics in the Cerrado Biome from 2020/21 to 2023/24 », Florianópolis, Santa Catarina, Brazil, 2024.

[viii] « 42% of the Soybean Expansion in Brazil's Agricultural Frontier Was Over Native Vegetation From 2019/20 to 2022/23 », *AgriBrasilis*, 12 December 2024.

[ix] The term "*new agricultural frontier*" refers to a new area of agricultural expansion.

[x] Maria Heloisa Barbosa Borges, « Almost nobody notices, but this agricultural giant spreads across four states, transforms the cerrado into farmland, pushes cities upward, changes export routes, and silently helps Brazil discover a new economic center away from the spotlight », *Click Petróleo e Gás*, 23 March 2026.

[xi] FAPESP, « Water overuse in Brazil's MATOPIBA region could mean failure to meet up to 40% of local demand for crop irrigation », *Phys.org*, 5 November 2024.

[xii] IMEA/CONAB

[xiii] Herausgeber Forum Bio und Gentechnologie e.V., « Bangladesch: Immer mehr Kleinbauern nutzen Gentechnik-Auberginen », 31 August 2022.

[xiv] USDA, « Agricultural Biotechnology Annual – Bangladesh », 4 December 2023.

[xv] USDA, « Agricultural Biotechnology Annual – Australia », 4 November 2023.

[xvi] Eric Meunier, « Only three GMOs/NGTs are cultivated », *Inf'OGM*, 4 August 2025.

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