



Current non-GMO scenario: up-to-date developments in Brazil

After a historically low production of below two million tons in the 2021/22 crop, the new non-GMO soybean crop is expected to yield more than 4 million tons. The state of Mato Grosso alone planted nearly one million hectares of conventional soybeans. Favourable weather conditions are pushing average yields to somewhere between 3.6 and 4 tons/ha – with high-performing farms getting close to 5 tons/ha.



New regulations in Europe

New restrictions have been enacted at the European level to combat climate change and biodiversity loss. Companies must verify that items supplied in the EU are not linked to deforestation or forest damage under the new rules.

Trading companies will have to provide EU authorities with relevant information, such as geo-location coordinates, and monitoring checks using satellite imaging tools. They must also demonstrate that these products comply with **local regulations of the country of production, including human rights, and the rights of indigenous people**. Penalties for non-compliance shall be proportionate and dissuasive and the maximum fine must be at least 4% of the total annual turnover in the EU of the non-compliant operator or trader.

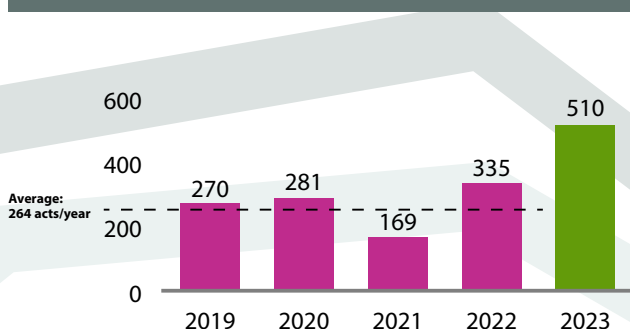
Non-GMO suppliers in Brazil, operating under certified traceability/IP programs for decades, have all the tools and protocols in place to comply with the new legal requirements.



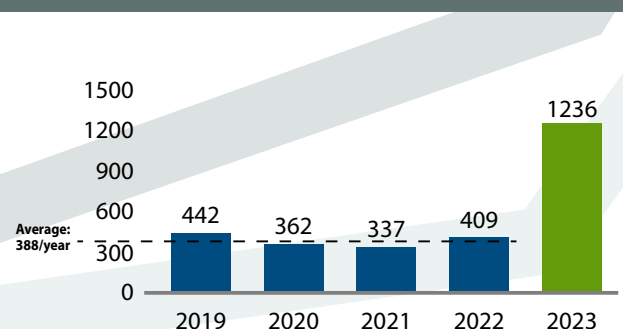
Despite the still negative numbers linked to deforestation, Marina da Silva, Congresswoman and one of the country's most prominent environmentalists, has been appointed to lead the Ministry of the Environment and Climate Change, a clear sign of the new government's determination to end deforestation in the country. She has already raised significant funds from the German and Norwegian governments to fight the destruction of the Amazon biome.

The new Brazilian government has reinstated all actions and law enforcement initiatives to protect the environment which were in place under Marina's last term (2003/2008) when deforestation rates dropped 83%.

Embargo acts
(Jan to Mar - 2023)



Fines applied over environmental crimes
(Jan to Mar - 2023)



In general, the supply of non-GMO soybean requires committed long-term buyers. Spot opportunities outside the consolidated certified production of non-GMO have produced destructive blows to a whole chain of committed farmers and exporters who have invested heavily in the sector. Shipments from less predictable origins have damaged frame agreements between Brazilian consolidated producers/exporters and their historical buyers in Europe, besides the possible linkage to environmentally unsustainable practices.

2022-2023 harvest figures in Brazil

As the 2022/2023 soybean harvest reaches the end in Brazil, figures confirm the most positive estimates for the crop and the harvested area, as of April 23, 2023, totalizing 85% of the planted area. Even though Rio Grande do Sul suffered the greatest losses owing to the dry weather, the total crop at the state level rose compared to last year. Also in the south, Parana has seen an outstanding season, a fantastic recovery from last year, with the current state production pegged at 82% higher than in 2021/2022. The state has the second-largest non-GMO soybean area in the country. Mato Grosso, the largest non-GMO production at the state level, has also seen an exceptional crop this year, with a historical record of 44.4 million tons, producing more than the total crop in Argentina this season.

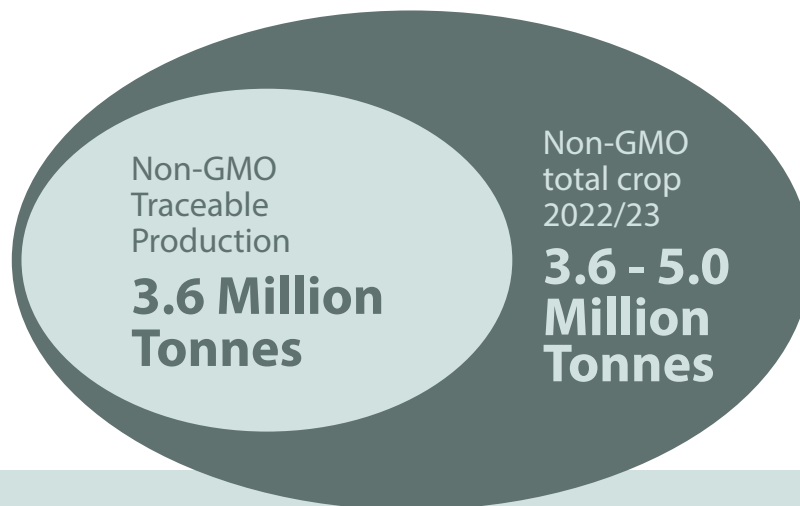
Total soybean crop in Brazil (2022/23, GMO + non-GMO)

REGIONS/ STATES	AREA (1000 ha)			YIELDS (kg/ha)			PRODUCTION (1000 tonnes)		
	21/22	22/23	Change	21/22	22/23	Change	21/22	22/23	Change
NORTH	2,577.0	2,850.9	10.6	3,252	3,349	3.0	8,379.9	9,547.3	13.9
RR	95	120	26.3	3,000	3,000	-	285.0	360.0	26.3
RO	491.7	497.1	1.1	3,394	3,396	0.1	1,668.8	1,688.2	1.2
AC	6.1	11.4	86.9	3,344	3,315	-0.9	20.4	37.8	85.3
AM	4.5	6.9	53.3	3,000	2,880	-4	13.5	19.9	47.4
AP	6.5	6.5	-	2,650	2,708	2.2	17.2	17.6	2.3
PA	828.5	939.5	13.4	3,015	3,063	1.6	2,497.9	2,877.7	15.2
TO	1,144.7	1,269.5	10.9	3,387	3,581	5.7	3,877.1	4,546.1	17.3
NORTHEAST	3,821.3	3,962.6	3.7	3,631	3,838	5.7	13,876.9	15,208.9	9.6
MA	1,075.1	1,111.7	3.4	3,324	3,510	5.6	3,573.6	3,902.1	9.2
PI	850.7	926.4	8.9	3,543	3,648	3.0	3,014.0	3,379.5	12.1
CE	-	2.1	-	-	3,373	-	-	7.1	-
AL	2.3	2.7	17.9	2,700	3,358	24.4	6.2	9.1	46.8
BA	1,893.2	1,919.7	1.4	3,847	4,121	7.1	7,283.1	7,911.1	8.6
CENTER-WEST	19,140.9	20,217.2	5.6	3,559	3,777	6.1	68,126.0	76,357.6	12.1
MT	11,108.5	11,819.4	6.4	3,735	3,763	0.7	41,490.2	44,476.4	7.2
MS	3,554.6	3,764.3	5.9	2,513	3,700	47.2	8,932.7	13,927.9	55.9
GO	4,393.6	4,547.4	3.5	3,958	3,878	-2.0	17,389.9	17,634.8	1.4
DF	84.2	86.1	2.2	3,720	3,699	-0.6	313.2	318.5	1.7
SOUTHEAST	3,198.4	3,435.1	7.4	3,679	3,813	3.6	11,767.0	13,097.6	11.3
MG	1,982.9	2,167.3	9.3	3,828	3,828	-	7,590.5	8,296.4	9.3
SP	1,215.5	1,267.8	4.3	3,436	3,787	10.2	4,176.5	4,801.2	15.0
SOUTH	12,754.4	13,096.1	2.7	1,835	3,010	64.1	23,400.0	39,421.6	68.5
PR	5,668.8	5,810.5	2.5	2,161	3,838	77.6	12,250.3	22,300.7	82.0
SC	727.6	730.5	0.4	2,802	3,570	27.4	2,038.7	2,607.9	27.9
RS	6,358.0	6,555.1	3.1	1,433	2,214	54.5	9,111.0	14,513.0	59.3
BRAZIL - TOTAL	41,492.0	43,561.9	5.0	3,026	3,527	16.6	125,549.8	153,633.0	22.4

Source: CONAB

The Non-GMO soybean harvest 2022/23

The Non-GMO sector has had an incredibly positive year, with total production being in line with the projected volumes – initial traceable production over 3.6 million, and the total non-GMO crop hovering somewhere between 4 and 5 million tons. The numbers for traceable production are based on conventional seed sales to farmers. The remaining 0.5 to 1.5 million tons refer to farmers who multiply the seeds on their own properties, going under the market radar.

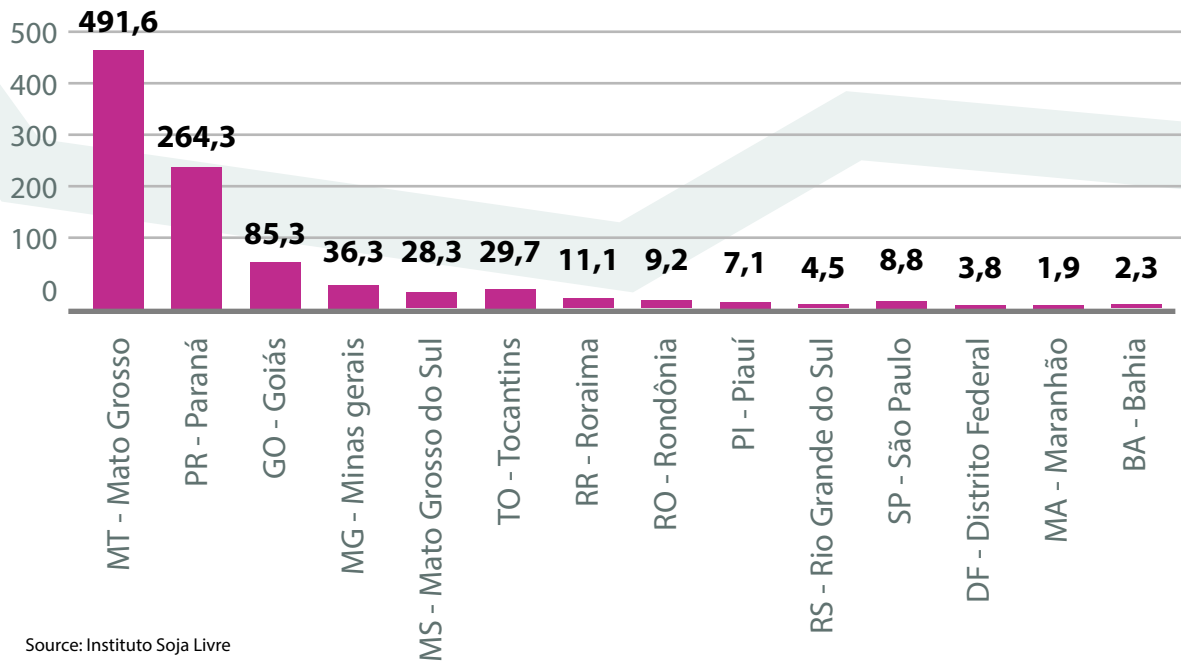


The lethargy observed at the beginning of the year at the buying end of the chain drove many farmers to sell their soybeans on the regular market, outside the non-GMO premium supply. At that moment, bonuses had melted close to zero, face plenty of remaining stocks in Europe and uncertainties regarding Brazilian production.



Lately, purchases slowly drove into motion, and the non-GMO premium in April escalated to nearly EUR 60 over soybean meal sales in Europe. Yet, figures are far from the attractive prices prevailing at the same time last year, and non-GMO beans remain flowing into the untraced, non-premium territory. In addition to the lack of a consistent demand for non-GMO, Brazil is moving fast to a storage collapse. The total grain crop in Brazil is projected to reach 312 million tons, 40 million tons larger than last year, and 100 million below the required capacity to handle the current production. Under the pressing scenario, farmers must move their stocks forward, to make room for the next crop cycle.

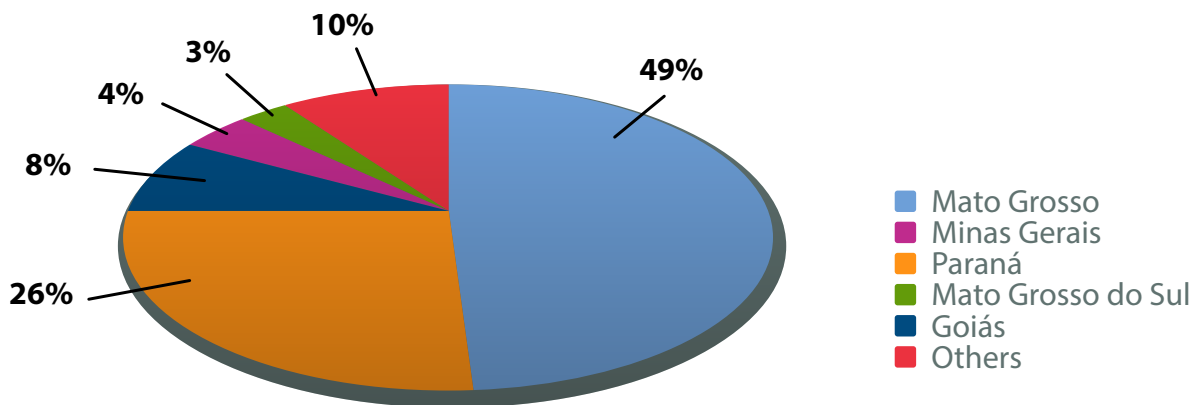
Non-GMO soybean production by state - 2023 (thousand hectares)



Source: Instituto Soja Livre

Paraná and Mato Grosso are the most consistent producers in the country.

Non GMO Production Share by State Brazil 2023



What has been observed in the fields is that the latest non-GMO seeds launched in the market have presented outstanding features, highly competitive with their GMO peers. Farmers in Parana have seen yields reaching over 4.5 tons per hectare, compared to the national average of 3.6 tons/ha. In the latest scenario, some farmers are seeing non-GMO production as a rewarding niche not only due to the premium paid over certified volumes but also to the attractive farm management conditions observed in certain parts of the country.

At the same time, glyphosate and other GMO-related crop protection chemicals have had prices increasing very quickly because of COVID plus the war in Europe, a scenario that has pushed energy and fuel prices to historical records, heavily impacting manufacturing in Europe and China.

The question to be asked is: are the recent achievements in R&D by conventional, non-GMO seed developers enough to compensate for the energy and efforts required by the severe traceability and IP protocols in the non-GMO niche? The question is even more relevant under the brink of new regulations in Europe entering into force, which will stretch traceability requirements to the entire soy trade from Brazil. Will increasing weed resistance to Glyphosate and RR-associated herbicides play a game-changing role in farmers' decision-making when choosing between GMO and Non-GMO seeds? Can buyers coordinate efforts to increase the support to the supply in Brazil?

Favourable moment for Non-GMO varieties

High-performing non-GMO varieties, which have just lately entered the market, have played a key role in this auspicious scenario. The development of such high-performance seeds began a decade ago, and the new genomes are less vulnerable to pests and diseases such as insects, Asian rust, and nematodes. Besides, new non-GMO varieties also include early maturing seeds.

As the efficiency of GMO-associated chemicals decreases, mostly due to the growing weed resistance, the availability of new non-GMO seeds bearing different traits to fight pests and weeds has grown, as the new breeding developments reach the market. The resistance to glyphosate, for instance, has turned commercial crops into weeds to the subsequent culture.

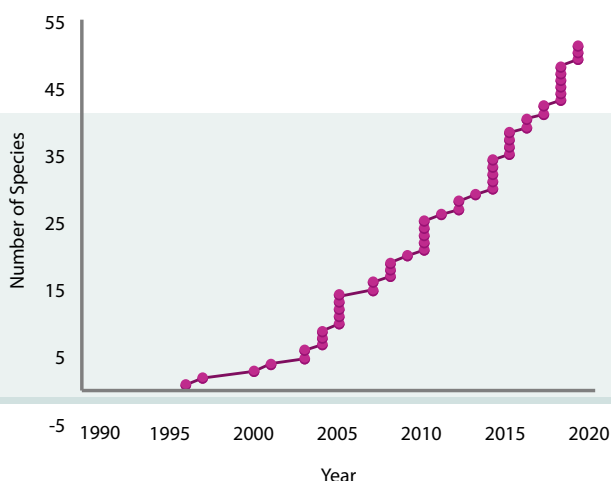
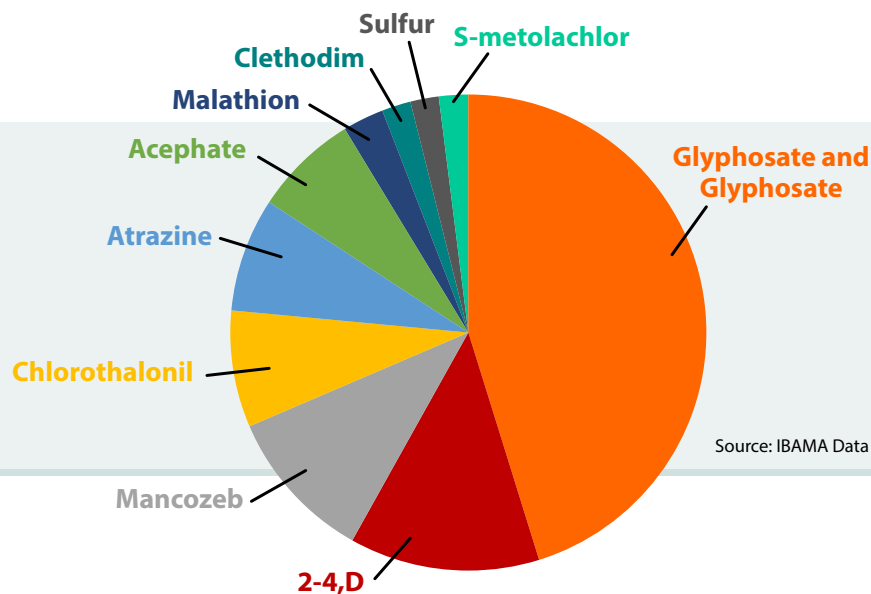


Unlike from most of the world, Brazil has multiple crop cycles within a year, due to exceptionally favourable moisture levels and sunny, mild winters. Cotton, which can be produced in sequence with soybean crops, enjoys a more favourable rain window if planted the soonest after soy is harvested. For instance, the Araguaia Valley, in Mato Grosso, clusters many non-GMO farmers alternating between soybean and cotton crops.

Furthermore, multiple crop management in Brazil also involves soybeans and corn. GM corn kernels that fall to the ground during harvest will grow indifferent to glyphosate sprays and compete for nutrients and sunlight with the subsequent soybean crop. Resistance to glyphosate has also spread beyond lab-engineered plants, creating weeds immune to herbicides. It is not a coincidence that the two most used chemicals in Brazil are glyphosate and 2,4-D. Facing the growing weed resistance to Glyphosate, mixing it with 2,4-D has been increasingly done to improve efficiency.

Top-selling agrochemicals in Brazil 2021 (tons)

Active Ingredient	Action	Sales (tons)	Ranking
Glyphosate and Glyphosate formulations	Herbicide	219,585.51	1 st
2,4-D	Herbicide	62,165.70	2 nd
Mancozeb	Fungicide	50,340.24	3 rd
Chlorothalonil	Fungicide	38,320.40	4 th
Atrazine	Herbicide	37,298.57	5 th



Increase in Glyphosate-Resistant Weeds Worldwide

Source: <http://weedsscience.org/Pages/GeoChart.aspx>

These new non-GMO varieties, which are resistant to water stress and severe temperatures, pests and diseases, offer many of the characteristics promised by GM technology while carrying a considerably lower danger of developing resistance to weeds and pests. More crucially, threat control is approached holistically, with plants developing stronger defence mechanisms to better fight antagonists.

Recent technology such as satellite and drone imagery have aided farm monitoring, where the latter can also be used for targeted pest management. However, commercial GM technologies are almost exclusively based on the use of herbicides or insect-killing agents. Glyphosate, the main chemical in more than 80% of GMOS, is a non-selective systemic herbicide that allows for extensive spraying, whereas conventional crops require monitoring and targeted application.



Logistics for non-GMO flows are also experiencing a positive moment. Terminal 39 has just completed a major overhauling at its port elevation structure in Santos, São Paulo. With new silos providing additional storage, state-of-the-art ship loaders, exclusive rail manoeuvring yards, head shunts for dedicated operations, and improved docking berths, T-39 has received major investments to improve its capacity and meet the demand for non-GMO export operations.

Additionally, the conflict in Europe has increased energy costs, making processing in Brazil an attractive alternative compared to crushing in the EU.



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