ProTerra™ FOUNDATION

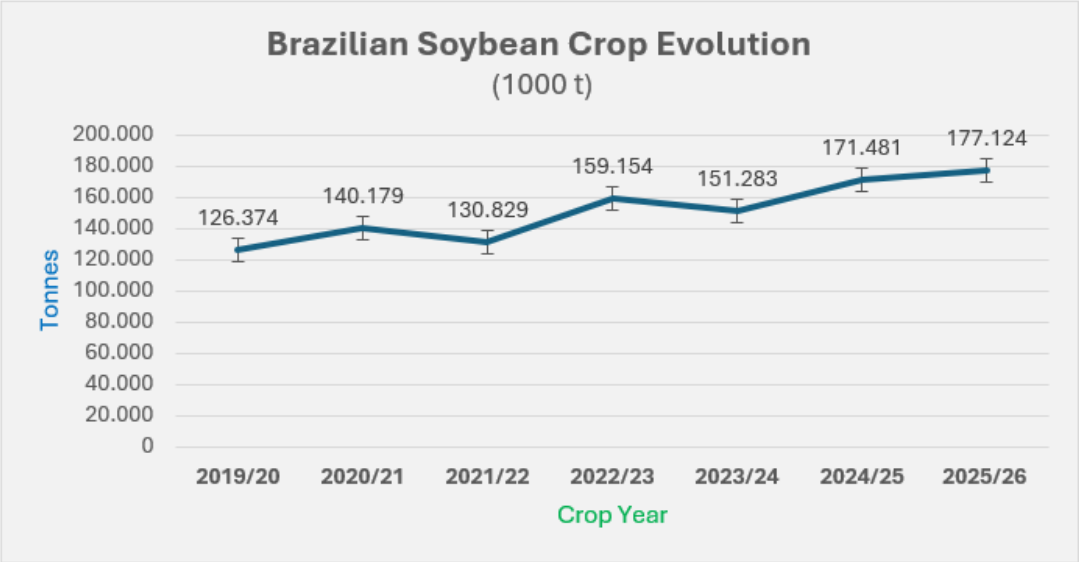
NON-GMO SOYBEAN UPDATE

Brazil Soybean Outlook: Record Supply Materialising

Brazil's 2025/26 soybean crop is estimated at a record 177.6 million metric tons, representing a 5.2% year-on-year increase. This increase is primarily driven by continued area expansion and higher yields.

Crop year	Area (1000 ha)	Yields (kg/ha)	Production (1000 t)
2019/20	37,362	3,382	126,374
2020/21	39,762	3,525	140,179
2021/22	41,794	3,130	130,829
2022/23	44,515	3,575	159,154
2023/24	46,096	3,282	151,283
2024/25	47,346	3,622	171,481
2025/26	48,936	3,620	177,124

Source: CONAB



Overall, production expectations are consolidating in the 175- to 177-million--ton range, confirming Brazil's role as the primary source of incremental global supply.

Regional Conditions: Execution Risks but Crop on Track

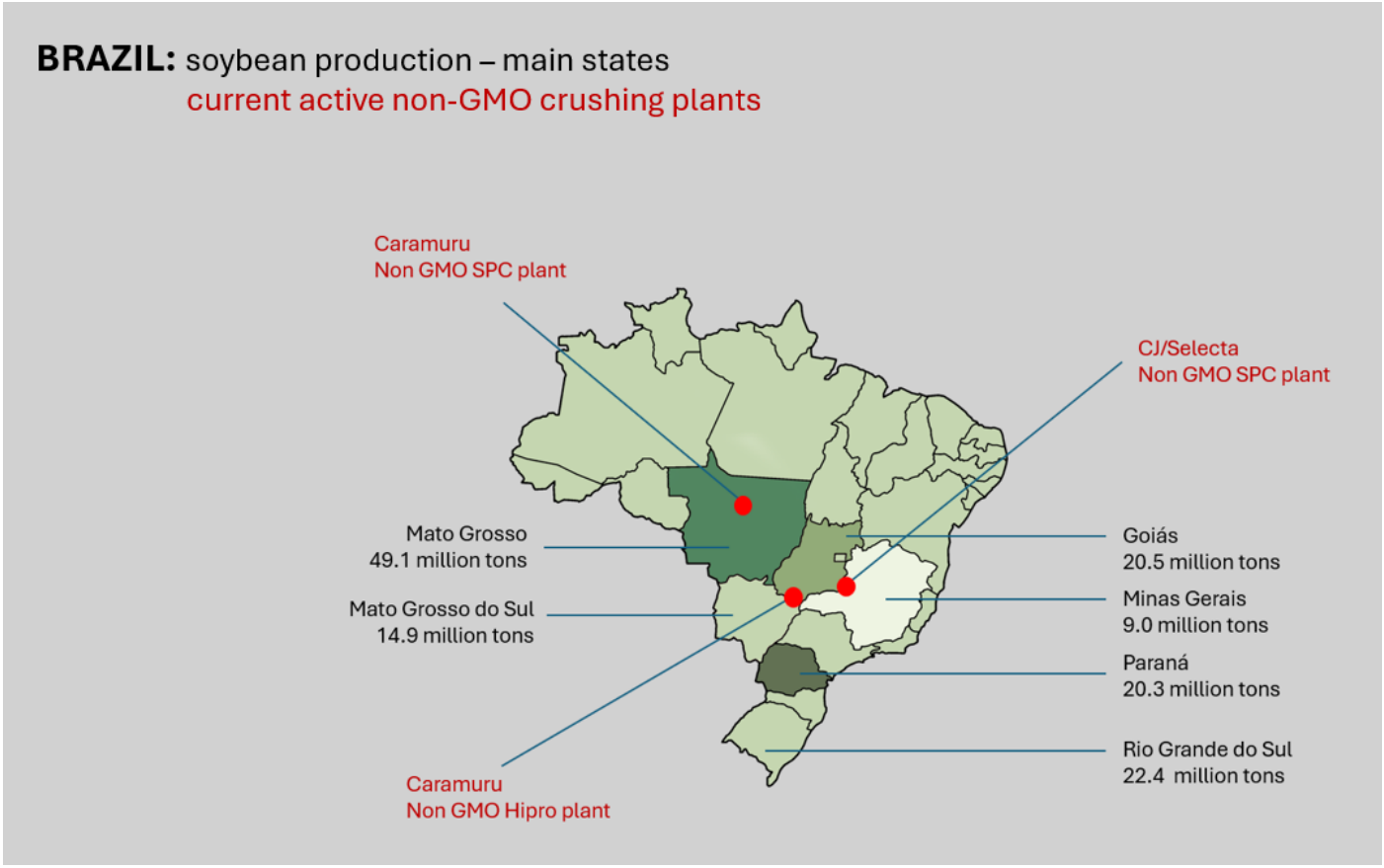
Early-season weather irregularities affected planting across the Centre-West, North/Northeast, and Minas Gerais regions, delaying fieldwork and forcing replanting in several areas. Rainfall normalised from the second half of November onwards, allowing planting progress to reach 90.3% of the projected area.

- **Goiás:** Planting delays followed the sanitary fallow period, but progress recovered to 85% by late November; the southwest region is 99% planted.

- **Southern regions:** Irregular rainfall in November led to replanting in parts of the south and east. While planted area remains near 5.15 million hectares and yields are currently estimated at 3,982 kg/ha, downside risks remain.

- **Paraná:** Fieldwork is advancing rapidly, with soybeans covering 4.8 million hectares and production estimated near 22 million tons, led by Campo Mourão, Ponta Grossa, Cascavel, and Toledo.

Despite localised weather stress, the national outlook continues to point toward a new record harvest.



Global Stocks: Persistent Oversupply Sets the Tone

The supply expansion in Brazil feeds into a structurally well-supplied global market.

- Global soybean ending stocks rose from ~115 million tons (2023/24) to 123 million tons (2024/25) and are projected to remain near 122 million tons in 2025/26.

- Soybean meal stocks increased from 14.8 million tons (2023/24) to 18.7 million tons (2024/25) and are expected to remain above 18 million tons in 2025/26.

- In the EU, meal stocks rose from ~0.9 million tons to 1.6–1.7 million tons, reinforcing regional supply comfort.

This persistent stock overhang continues to cap price recovery, despite steady growth in global consumption.

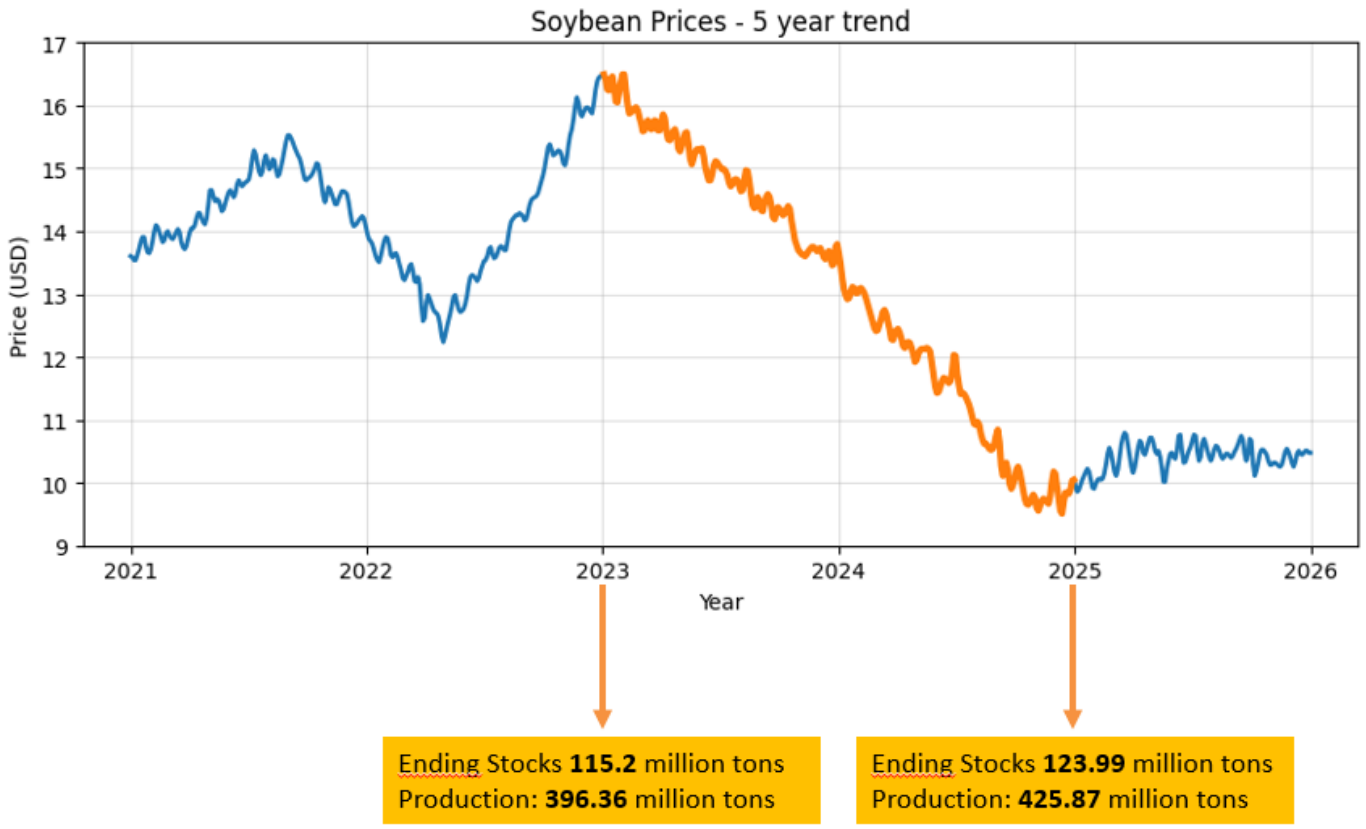
Price Outlook:

Against this backdrop, soybean producers are facing a challenging pricing environment.

- USDA projections place the 2025/26 season-average price between USD 10.00–10.50/bushel, reflecting ample stocks and limited tightening.

- In Brazil, upside scenarios point to BRL 150–160/bag, supported by weather losses in Southern Brazil and firmer Chinese demand.

- Downside scenarios suggest that prices could retreat toward BRL 120/bag if the weather remains favourable and Chinese demand slows.



Farm Economics:

In Mato Grosso, using Sorriso as a benchmark, the soybean break-even is estimated at 53 bags/ha at BRL 133 per bag, leaving producers with a minimal margin buffer. Under this cost structure, even modest price declines or yield losses could quickly lead to negative results.

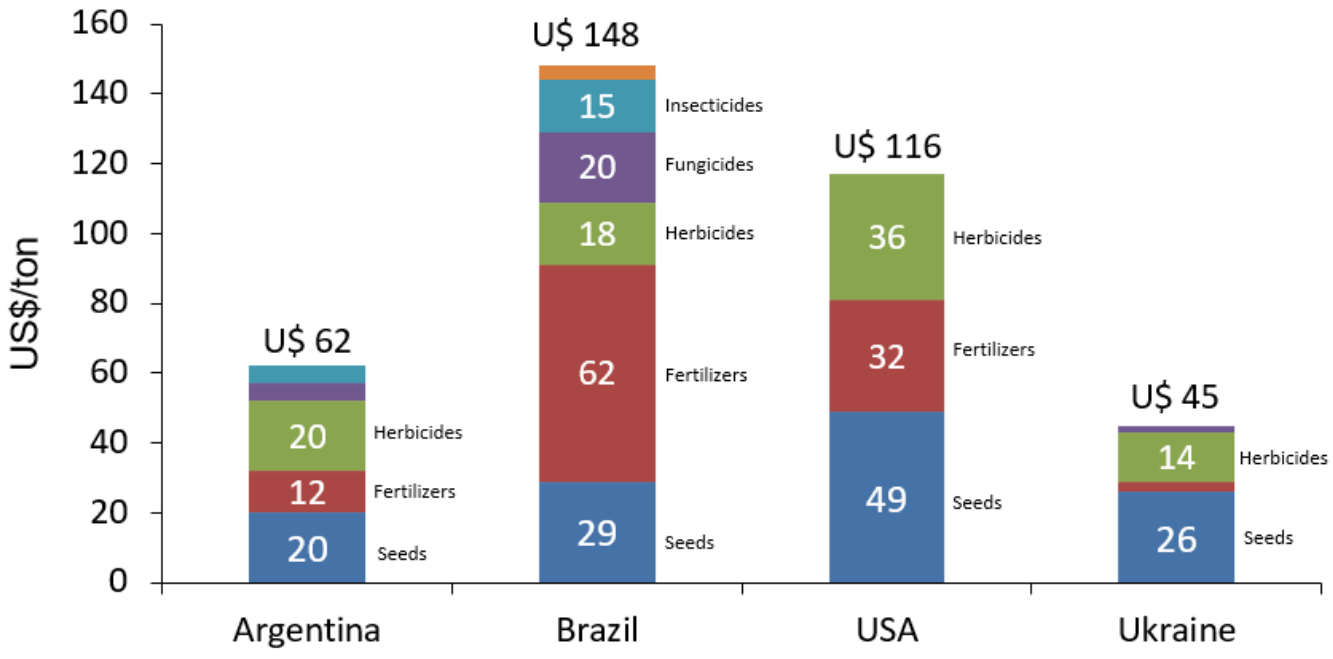
Structural cost pressures amplify this exposure:

- **Climate pressure:** Hot and humid conditions intensify pest and disease incidence, making Brazil one of the world's largest consumers and cost bearers of insecticides and fungicides.

- **Soil constraints:** Predominantly low natural fertility soils require heavier and more frequent fertiliser applications.

- **Global cost position:** these factors place Brazil among the highest-cost soybean producers worldwide, in sharp contrast to regions such as Ukraine, where highly fertile soils and cold weather significantly reduce input intensity and production costs.

Input Cost Breakdown – Major Soybean Producers (Soybeans)



Source: AgriBenchmark / Cepea (2024) | Average of 5 seasons (2018/19–2022/23)

At current prices near BRL 103-104/bag, margins are already negative. Even with yields rising to 65 bags/ha, revenues reach only ~BRL 6,695/ha, still BRL 355/ha below break-even. Prices would need to recover to ~BRL 108.5/bag to restore profitability, presuming yields of 65 bags/ha.

Corn as a Buffer: Partial Margin Offset

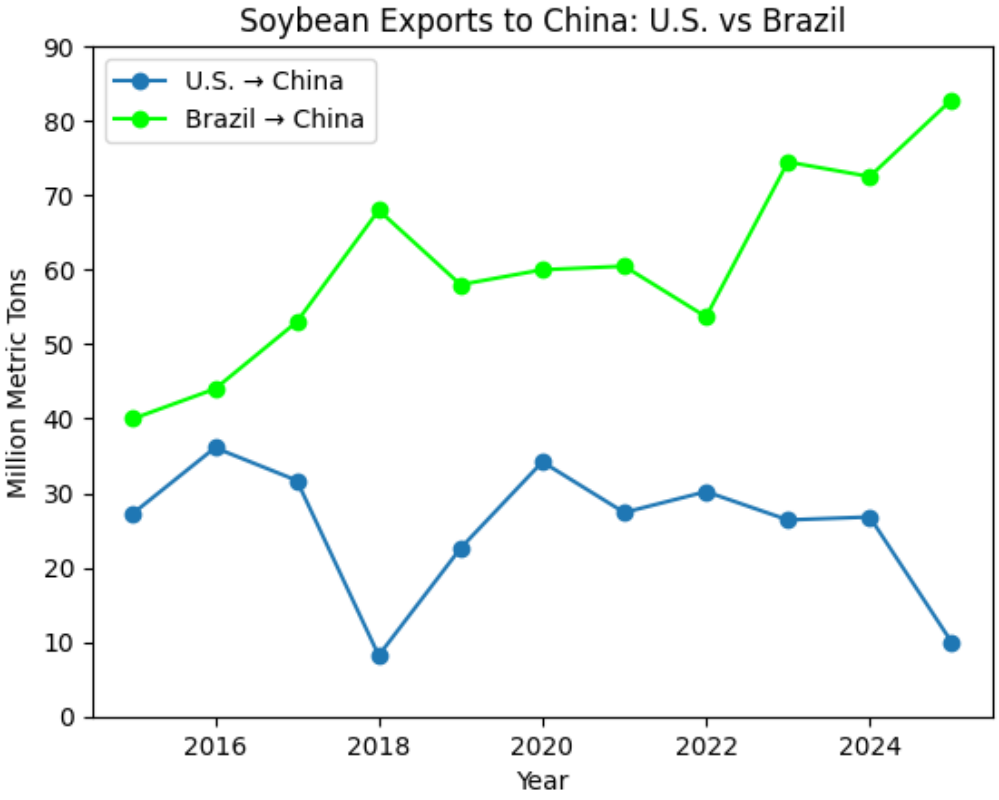
Part of this pressure has been absorbed by subsequent corn crops, which have allowed many producers—particularly in double-cropping regions such as Mato Grosso—to partially offset soybean losses and stabilise cash flow.

Financial Stress and Export Response

This thin-margin environment is exposing deeper financial vulnerabilities:

- Brazilian agribusiness debt is estimated at R$188 billion (USD 35 billion), equivalent to roughly 2.5 harvests of gross revenue.
- Farm bankruptcies have more than doubled over the past two years.
- Banco do Brasil holds nearly 50% of farm credit, with ~20,000 delinquent clients, 74% of whom had never defaulted before 2023 (Valor Internacional).

In response, farmers have accelerated forward sales ahead of further price weakness. According to ANEC, Brazilian soybean exports in January 2026 are projected at 2.40 million tonnes, which is an increase of 113.8% year-on-year. Ongoing trade tensions affecting US soybeans, combined with an early harvest in Brazil—particularly in Paraná—have reinforced front-loaded export dynamics.



Fertiliser market-related developments

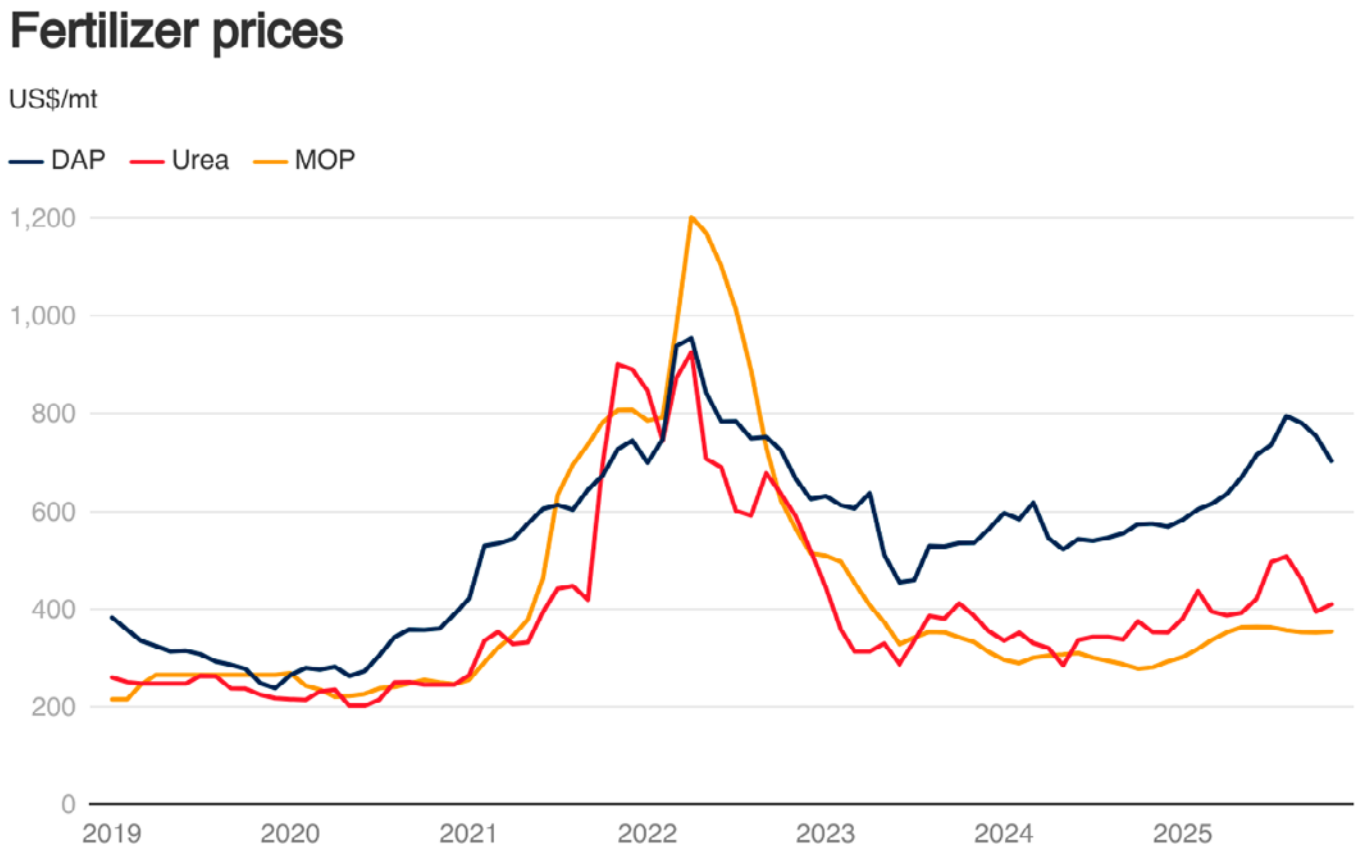
Brazilian soybean farmers have experienced three consecutive seasons of margin compression driven by high input costs, declining grain prices, and adverse weather conditions. Although fertiliser prices retreated from their 2022 peak, affordability remains constrained amid weaker crop prices and tighter financing conditions. According to Globo Rural, soybean operating margins in Brazil are expected to decline 35.6% in the 2025/26 season, reflecting a 2.8% drop in soybean prices, a 9% decline in productivity, and a 7.8% increase in production costs.

Many farmers delayed purchasing fertiliser due to financial constraints, which significantly increased production costs. In southern Brazil, a typical 285-hectare farm incurred an additional USD 2,820, requiring 7.5 metric tons of soybeans to offset the cost. In Cascavel, fertilisation costs rose 8.5%, adding USD 984 on a 74.75-hectare farm. In the Center-West region, costs increased 7.8% in Rio Verde, generating an additional USD 27,974 on a 1,500-hectare farm, while in Sorriso, fertilisation costs rose 5.1%, adding USD 15,484, equivalent to 45.2 metric tons of soybeans.

Despite recent price easing, global fertiliser markets remain structurally tight. Although nitrogen demand has softened, prices remain elevated due to high input costs, trade restrictions, and export constraints—particularly from China. Sanctions on Belarusian potash and new EU tariffs on fertilisers from Russia and Belarus have further reshaped trade flows, increasing costs for importing regions such as Brazil.

Fertiliser prices eased in October–November 2025 following a 14% q/q surge in 2024Q3, with DAP and TSP prices down 6% and 3% respectively, while urea rose by 4% m/m. Prices remain about 17% higher year-on-year.

While fertiliser prices are expected to moderate in 2026–27, they will remain well above pre-2022 averages. Persistently low affordability, combined with carbon intensity and regulatory pressure on nitrogen fertilisers, may accelerate the transition toward biofertilisers, organic inputs, and regenerative systems, a trend likely to favour non-GMO production chains.

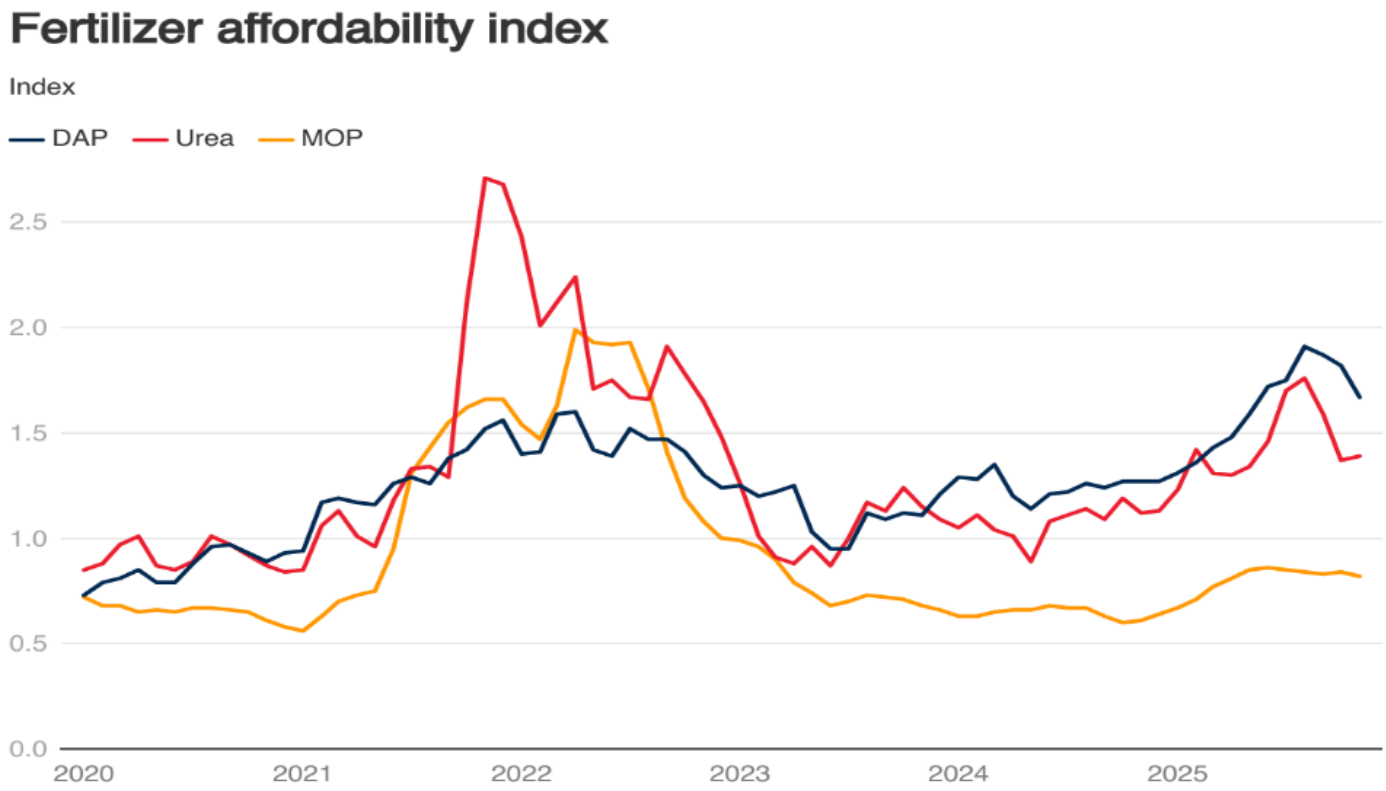


Note: DAP = diammonium phosphate; MOP = muriate of potassium; mt = metric tons. Monthly series. Last observation is November 2025.

Source: Bloomberg; World Bank.

Such increases, combined with weaker food commodity prices, such increases have squeezed farmers' profit margins, particularly for fertiliser-intensive crops, all over the world, similar to that seen in Brazil.

Affordability indexes for all three fertilisers—the ratio of fertiliser to crop prices — remain elevated relative to the pre-2022 period.



Note: DAP = diammonium phosphate; MOP = muriate of potassium. Ratio of fertilizer prices to the food price index. A rising ratio indicates reduced affordability of fertilizers relative to food prices, while a declining ratio suggests improved affordability. Last observation is November 2025.

Source: World Bank.

The demand side: Animal Protein volume shifts from 2024/25 to 2025/26

Global animal protein production appears to have entered a plateau phase, with overall output stabilising in recent years. While poultry production continues to register modest incremental growth, this expansion has largely been insufficient to offset stagnation or mild contraction in other segments, such as beef and pork.

China: Global Price Anchor

Although China plays a limited role in non-GMO imports, it remains the key driver of global soybean pricing.

- Pork production stabilised around 57 Mt after peaking near 60 Mt in 2023.
- Feed demand growth is slowing, capping upside for soybean imports.
- Poultry production continues to rise, but not enough to offset the broader feed stabilisation.

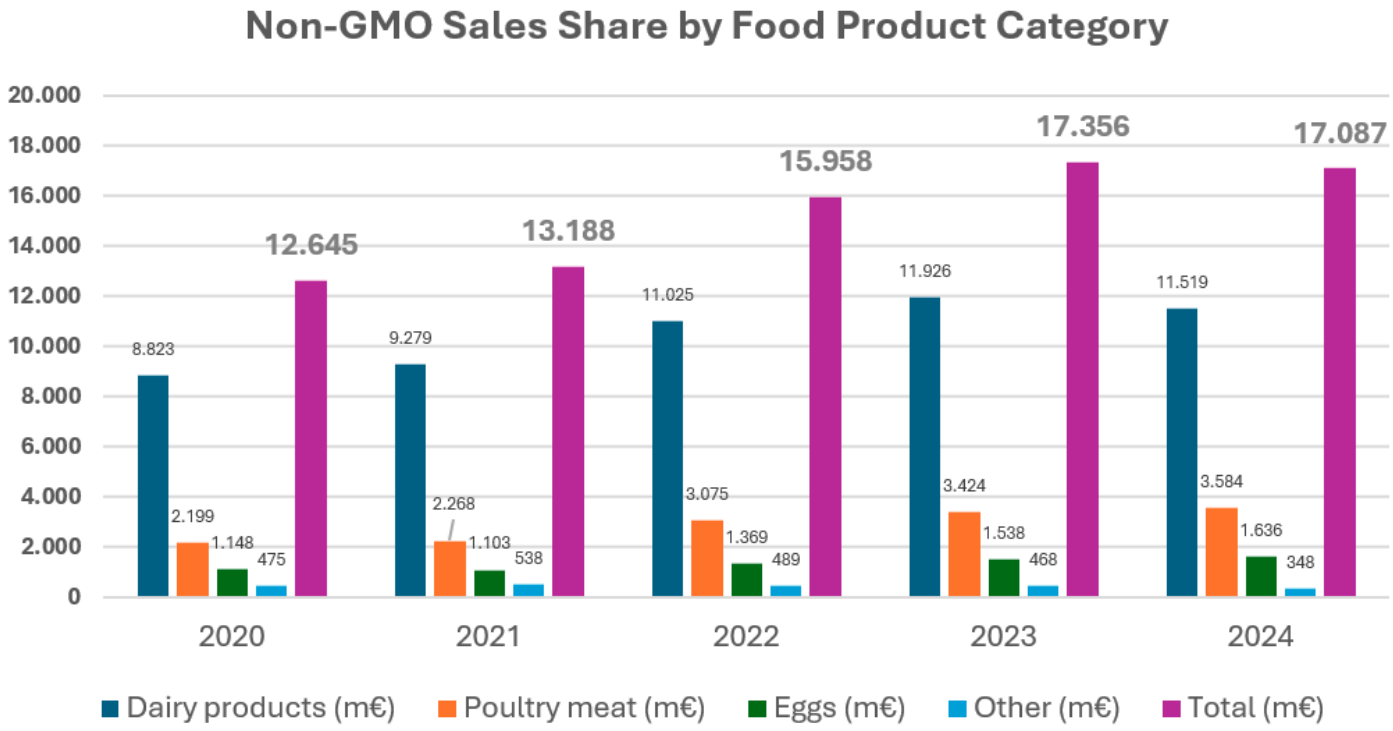
The European animal protein market presents similar trends

The result is a large but no longer expanding demand base, which effectively reinforces price ceilings across the animal protein and feed markets. The interaction of these forces shapes a distinctly bearish market environment, with no clear near-term inflection points on either the demand or supply side.

In this context, farmers—particularly in Brazil, where production costs are structurally higher—are compelled to find alternative sources of revenue. A growing share of this adjustment is occurring through sustainability- and climate-linked premiums, including non-GMO, deforestation-free, and low-carbon supply chains. These differentiated markets offer one of the few remaining pathways to price uplift and margin stabilisation, as they are driven less by volume expansion and more by regulatory compliance, traceability requirements, and buyer-led ESG commitments.

Non-GMO Demand Drivers: EU-27 Production Shifts

The animal protein market in the European Union has experienced a long period of structural expansion. However, from 2023 onwards, total production has entered a phase of marginal contraction, with the notable exception of the poultry and egg sectors, which have continued to expand consistently in recent years.



Looking ahead to the 2025–26 period, USDA projections confirm that these trends will continue in the EU:

- Cattle feed: –1.4% to 41.3 Mt, reflecting tightening environmental regulations, a decline in cattle herds, and an ongoing structural adjustment in the beef sector.

- Pig feed: –0.8% to 47.0 Mt, as African Swine Fever (ASF) continues to impact production in certain European regions; pork remains the least demanding segment in terms of non-GMO feed requirements.

- Poultry feed: +0.9% to 50.4 Mt, reinforcing poultry as the clear growth engine of European animal protein production.

- Milk production is expected to decrease by 0.5% to 144.8 Mt in 2026, despite continued growth in cheese production, reflecting shifts in product mix rather than an increase in volume.

Overall, the structural expansion of poultry production (including laying hens), combined with the sheer scale and resilience of the dairy sector, has remained the primary driver of non-GMO demand for imported feed inputs, particularly soybean-derived products (meal and specialty proteins). These two segments account for the bulk of Europe's sustained demand for certified non-GMO feed ingredients, even in a context of stagnating or declining total animal protein output in Europe.

Soymeal Consumption by Selected European Countries / Regions (2023)

Rough estimate, excluding Russia. Unit: 1,000 tonnes

Country / Region	Total (GM + non-GM)	Total (GM + non-GM)	Non GMO
Austria	414	214	200
Baltic states	241	>200	<10
Benelux	3010	2860	150
Croatia	191	171	20
Czechia	335	>300	<10
Denmark	1378	1128	250
France	2858	2608	250
Germany	2842	1992	850
Greece	580	545	35
Hungary	452	417	35
Ireland	577	>500	<10
Italy	3287	2937	350
Poland	2877	2777	100
Portugal	908	>800	<10
Romania	668	>600	<10
Slovakia	156	131	25
Slovenia	209	189	20
Spain	4155	>4000	<50
Sweden	173	0	173
Σ EU-27	**26600**	**24000**	**2600**
UK	2550	>2000	
Norway	275	0	275
Switzerland	259	0	259
Ukraine	700	>650	<10
Serbia	440	0	440
Σ Europe*	**30460**	**26860**	**3600**

Given that the cultivation of genetically modified (GM) crops is banned or highly restricted in most EU-27 Member States, current trade patterns show a clear predominance of GM soybeans and derivatives imported into the European Union. This pattern suggests that trading strategies have favoured third-country (GM) suppliers that are not subject to environmental, sustainability, traceability, and regulatory requirements equivalent to those imposed on EU farmers, thereby undermining the principle of a level playing field within the European market.

Fundamentally, the rationale behind the first-generation GMO technologies—such as Roundup Ready (RR1) and RR2/Bt—was based on the promise of lower production costs, higher yields, and an absence of risks to farm workers and consumers. However, current evidence increasingly challenges these assumptions:

1. Production costs have risen significantly following the widespread adoption of glyphosate-tolerant and Bt technologies, particularly in Brazil—the world's largest soybean producer—driven by herbicide resistance, increased chemical use, and more complex pest management requirements

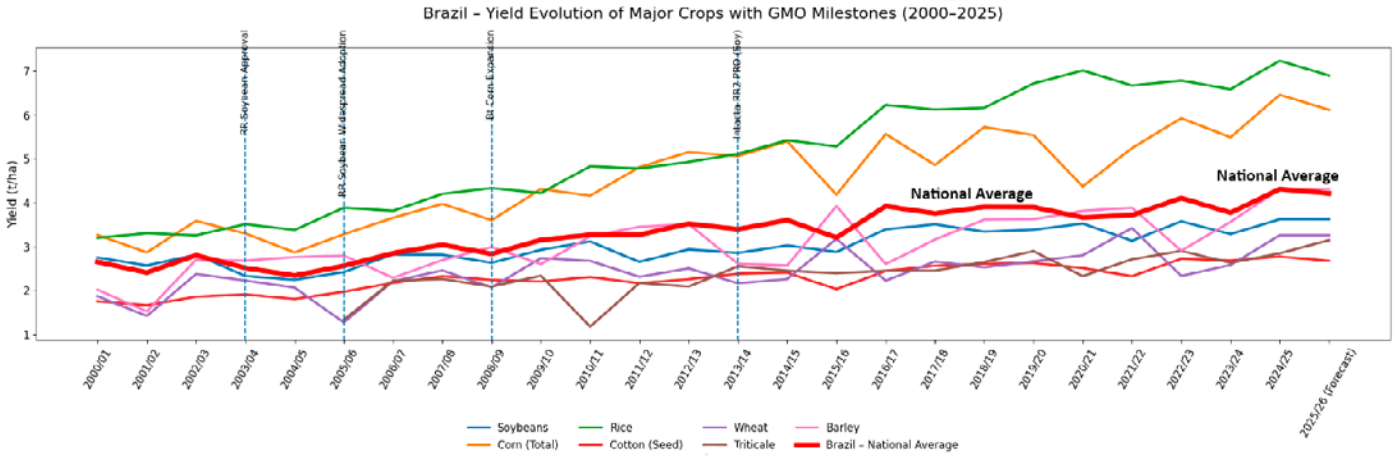
2. Recent non-GMO soybean varieties demonstrate average yields that are comparable to, or in some cases higher than, GM varieties, calling into question the notion that genetic modification is a prerequisite for productivity gains (source: IMEA, Mato Grosso market reports).

3. A highly influential scientific paper published in 2000, which asserted that glyphosate "does not pose a health risk to humans," has been formally retracted 25 years later due to serious ethical concerns, including industry manipulation and raising broader questions about the scientific basis underpinning early regulatory approvals and public risk assessments.

Taken together, these elements suggest that the growth in soybean yields and competitiveness are primarily driven by agronomy, plant breeding, crop management practices, and structural farm efficiencies, rather than by GMO technologies per se. This has direct implications for EU trade policy and sustainability frameworks, as well as for the reassessment of non-GMO supply chains as viable and competitive alternatives.

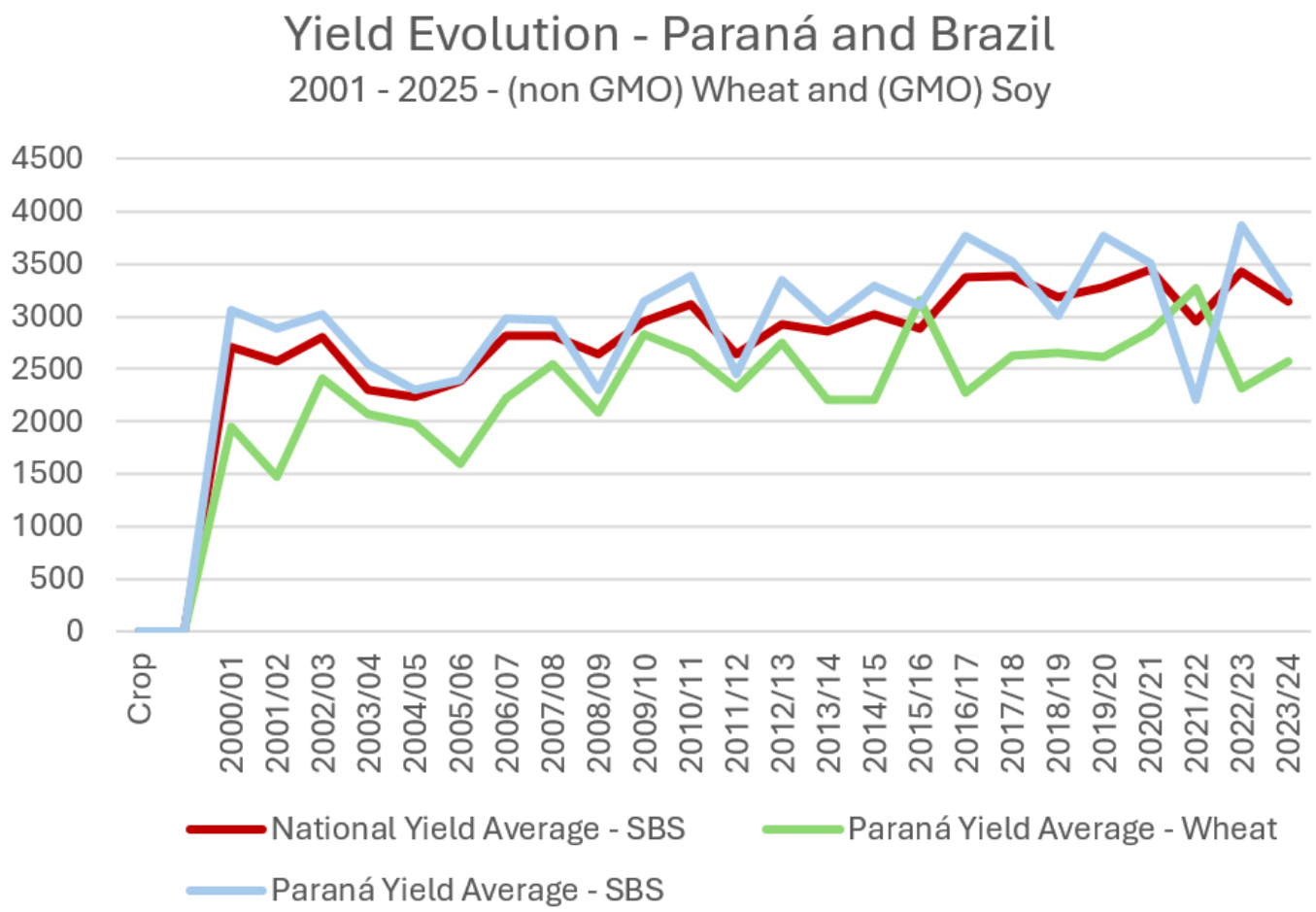
The following chart illustrates the long-term yield evolution trends across Brazil's main crops. Rice (shown in green) is particularly noteworthy: although cultivated as a fully non-GMO crop, it has achieved yield gains that surpass those of corn, which is predominantly GMO.

After 2010, soybeans became predominantly GMO. Their yield trajectory is broadly comparable to that of several non-GMO crops—such as wheat, triticale, and barley—and closely tracks the national average.



Source: CONAB – historical yield series by crop.
GMO milestones based on CTNBio approvals and commercial adoption timelines.
Note: 2025/26 = forecast. Triticale data available from mid-2000s onward.

The next chart shows yield trends over the same period for soybeans and wheat in Paraná, alongside the Brazilian average soybean yield. Once again, wheat—which is cultivated as 100% non-GMO—exhibits a yield trajectory that closely mirrors that of soybeans. The convergence across crops suggests that Brazil's aggregate productivity gains reflect a combination of agronomic improvements, climatic conditions, and structural changes in farming systems, rather than being attributable to GMO adoption alone.



Non-GMO soybean production

Brazil:

Nevertheless, the GMO share of Brazil's soybean seed market has reached extreme levels, now exceeding 98%, while GMO adoption in corn is estimated at no less than 95%. Such penetration rates strongly indicate widespread non--compliance with insect resistance management (IRM) refuge requirements. Under proper stewardship, at least 15–20% of soybean and corn acreage should remain non-GMO/Bt-free to preserve trait efficacy.

As a consequence, Bt resistance in maize is now firmly established and effectively irreversible—most notably in the case of the fall armyworm (Spodoptera frugiperda). In soybeans, although Bt traits still retain partial effectiveness, production systems have become increasingly dependent on chemical complements. This trend undermines the original promise of biotech crops: reduced pesticide use, lower production costs, and greater system resilience.

Despite this critical agronomic backdrop, the remaining non-GMO segment—estimated at roughly 1% of Brazilian production—remains more than sufficient to meet current demand for labelled non-GMO exports. Existing trade commitments amount to approximately 300/320 thousand tonnes of soy protein concentrate (SPC), equivalent to around 600 thousand tonnes of soybean meal (SBM).

Although the harvest has only just begun, additional volumes of non-GMO Hi-Pro soybean meal may still be negotiated. While it is too early to provide definitive estimates, total purchases of Brazilian non-GMO products are expected to reach one and a half million tonnes in soybean equivalent. The absence of long-term framework agreements—and the continued reliance on spot or late-season sales—significantly limits visibility over final volumes.

What is unequivocal, however, is the structural decline in Brazilian soybean and soybean meal exports to key non-GMO markets. Prior to 2014, combined exports approached five million tonnes per year, whereas today, volumes are closer to one million tonnes. This contraction is not due to supply constraints—Brazilian non-GMO availability has consistently exceeded demand—but rather to structural failures in trade organisation, contracting strategies, and long-term market positioning.

India:

In India, soybean meal production has entered a period of structural decline, falling from approximately 9.0 million tonnes in 2023/24 to an estimated 8.8 million tonnes in 2024/25, with projections pointing to around 7.4 million tonnes in 2025/26. Domestic consumption has also eased, while exports are forecast to contract sharply—from nearly 2.0 million tonnes in 2023/24 to under 1.0 million tonnes by 2025/26. These developments reflect tighter soybean availability, policy uncertainty, and reduced competitiveness relative to South American meal, which is diminishing India's role as a marginal exporter.

Canada / Norway

Approximately 600 thousand tonnes (soybean equivalent) are currently being supplied to the Norwegian aquaculture market via Canada, following the importer's decision to discontinue sourcing from Brazil.

Other origins

Additional marginal volumes may emerge from Africa and Argentina, where recently commissioned crushing plants have organised dedicated non-GMO supply chains targeting the European market.

Relevant political facts and structural implications

At the start of 2025, a narrow majority of EU Member States voted in Brussels in favour of abolishing mandatory GMO labelling. Germany abstained, reflecting internal political constraints rather than active support for deregulation. A decisive vote is now scheduled for January, when the European Parliament will either confirm or overturn the proposal.

Meanwhile, under intense pressure from Brazil's large-scale soybean sector, major trading companies withdrew from the Amazon Soy Moratorium (ASM). The decision was formally announced by Abiove in January 2026, after new legislation in Mato Grosso removed tax incentives for companies that complied with the moratorium.

At the same time, the European Union Deforestation Regulation (EUDR) was postponed for a second time, now to 2027. This delay has significantly weakened its credibility and deterrent effect, particularly among Brazilian market participants, many of whom now question whether the regulation will ever be fully enforced.

Together, these developments are widening the sustainability and competitiveness gap between EU farmers and their international competitors. EU protein producers—especially those in the poultry, dairy, and pork industries—are increasingly unable to match the volumes and prices offered by suppliers operating under far more lenient environmental and climate requirements.

Europe requires more than 30 million tonnes per year in soybean-equivalent proteins to sustain its animal protein sector. It is unrealistic to assume that domestic soybean production could expand tenfold in order to close this gap, and it is equally implausible to expect genetic engineering to overcome fundamental biophysical constraints. Photosynthesis remains an energy-limited process, with solar radiation being the binding factor. Even in the event of a technological breakthrough, production efficiency would remain structurally higher in regions south of the Equator.

The EU–Mercosur Trade Agreement, to be signed before the end of January, could, in principle, become a strategic asset, strengthening Europe's competitiveness in animal protein markets against global contenders such as China by securing feed supply and reinforcing value-added production.

However, this potential hinges entirely on stronger regulation, rather than deregulation. Trade without enforceable equivalence merely transfers competitive advantage to lower-standard producers.

Therefore, Europe faces a clear strategic choice: it must either reinforce regulation to ensure fair competition, and at the same time start establishing long-term resilient relationships with equally sustainable suppliers, or remain captive to the ordinary trading logic, where volume and cheapness prevail over value and alliances. The EU's poultry, dairy, and pork industries, including farmers, should not pay the price through margin erosion, consolidation, and rising import dependency.

Retailers and protein producers: the fundamental power shift

The deeper enabler behind the current trajectory is a structural shift in power along the food chain. Today, decision-making authority over supplier selection and contracting primarily lies with trading teams, which operate markets on a daily, transactional basis.

Within orthodox trading logic, the broader the range of supply options—and the weaker the long-term commitments to any single supplier—the greater the perceived opportunity for margin optimisation, flexibility, and short-term efficiency.

The difficulty lies in the fact that food consumers do not share the same value system. In markets where consumers are free to choose what they eat, purchasing decisions are increasingly influenced by factors that extend beyond traditional price and volume dynamics. Climate change, environmental integrity, and social responsibility are no longer peripheral considerations; rather, they are reshaping demand patterns and redefining what is considered acceptable in terms of sourcing practices.

As a result, all actors in the food system—farmers, animal protein processors, and retailers alike—are being forced to internalise consumer expectations into their value chains. For conventional trading teams, this shift is often perceived as friction, as it imposes external constraints on a procurement model that was once purely efficiency-driven.

Yet sustainability standards are no longer just a symbolic or bureaucratic burden enforced by auditors. Instead, they have become tangible, monetised risks capable of materially affecting costs, access to markets, financing conditions, brand equity, and long-term business viability. The impacts of climate change are already translating into measurable financial losses and reputational damage, moving the issue beyond the realm of belief or denial.

In this context, the EU–Mercosur Trade Agreement represents a critical inflection point. It may indeed become another nail in the coffin of European farmers if it merely amplifies price competition and deregulated sourcing. But it could also evolve into a framework in which Europe and South America complement one another—granting European players access to some of the world's most efficient and potentially most sustainable agricultural systems, incorporating such values in their products.

For suppliers targeting the EU market, it means reducing dependency on volume-driven buyers whose primary objective is to keep production cheap at any cost.

Which of these outcomes prevails will not depend on trade liberalisation itself, but on whether regulation, transparency, and sustainability equivalence are strengthened rather than diluted. The power shift in the food chain is real; the question is whether it will be governed by short-term trading logic—or by long-term alignment with consumer values and systemic resilience.

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