



Atlas of Food

Global food prices are particularly sensitive to weather and government policy in a few key regions. This report highlights those locations and explores the relationship between wheat, corn, soybeans, pork, beef and poultry.

2025

I Credits

Authors: Aditya Kondalamahanty, Vivian Iroanya, Samyak Pandey, Victor Pereira de carvalho, Desiré Sigauco, Graham Style, Beatriz Baltieri, Graham Style, Renan Araujo, Desiré Sigauco, Nuo geng Chen.

Editors: William Bland, Meghan Gordon.

Design: CI Content Design

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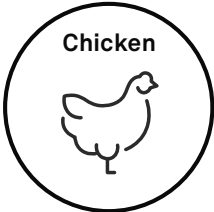
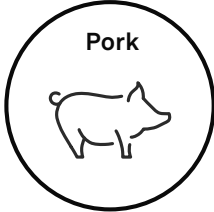
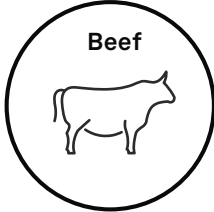
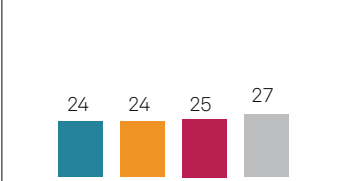
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Introduction

The cultivation of crops was the basis for the earliest societies. Through agriculture, producers first developed the concept of forward sales, and governments quickly learned the importance of food security.

In arid, populous countries like Egypt, state grain boards exist to import wheat and provide subsidized bread. In China, the government’s commitment to stockpiling is informed by several provinces’ experience of famine 65 years ago.

Key properties: Meat production

	Chicken 	Pork 	Beef 
Selected exporter	Brazil	Spain	Australia
Consumption (per capita/kg per year)	45.1	56.2	26.9
Feed conversion ratio (kg feed/1 kg weight gain)	1.70 - 2.05	2.05	5-7
Age at harvest (months)	1.5	6	15-30
Most-commonly traded form	• Skin-on boneless legs • Skinless boneless breast • Feet and paws • Wings	• Bellies • Loins • Hams	• 90CL lean beef trimmings • Frozen
Typical feed consumption (%)			• Grass • Lot feeding: - Grain (70%-80%) - Cottonseed - Silage - Molasses - Straw - Vegetable oil - Mineral/vitamin premix

Russia's invasion forced Ukraine to close Black Sea ports that had handled some 16% of global corn exports. The subsequent price spike for many agricultural commodities showed the entire supply chain's sensitivity to the price of corn, which serves as the main input for feeding livestock.

The Atlas of Food shows the changes to key trade flows, such as Ukraine's supply of corn to China. It also represents the crop cycle in each month for the key producers, illustrating, for example, why traders pay such close attention to Brazil's weather in April and May.

Demand for corn, as well as soybeans, has accelerated in response to the rising per capita consumption of proteins. People typically spend more on pork, beef and chicken as they become more prosperous. The feed conversion ratio for swine and cattle is higher than two – meaning that many pork producers need to give a pig at least 2 kg of feed to produce 1 kg of meat.

The Atlas of Food charts the recent price history for these key commodities, showing the interconnection between crops and the protein markets for which they are the main inputs. It also shows their sensitivity to government policies on the biofuel sector, where corn and soybean oil are key feedstocks.

Soybean

Credits: Desiré Sigaudó

The world's main oilseed is processed to produce meal and oil. China's crushing plants rely on supplies from Brazil and the US.

Key properties

Soybeans have a growing period of around four months and are more resilient to drought than corn and wheat.

Thanks to Brazil's proximity to the equator, farmers in key regions can plant and harvest a corn crop and a soybean crop from the same field in a single year, a process known as double cropping.

In the fight for orders from China, these Brazilian farmers enjoy a cost advantage over counterparts the US Midwest, where the climate does not support double cropping.

Each year, these farmers must assign a field to either corn or soybeans, not both.

The land will usually yield a far bigger corn crop, but soybeans fetch a higher price by volume.

Farmers in this region therefore chose which of the two crops to plant based on the soybean-to-corn price ratio.

When the price of soybeans is 2.5 times the price of corn or more, farmers are expected to allocate a greater area of their farmland to soybeans in the next crop cycle, whereas when the ratio is 2.3 or less, farmers will make the opposite switch.



Global production

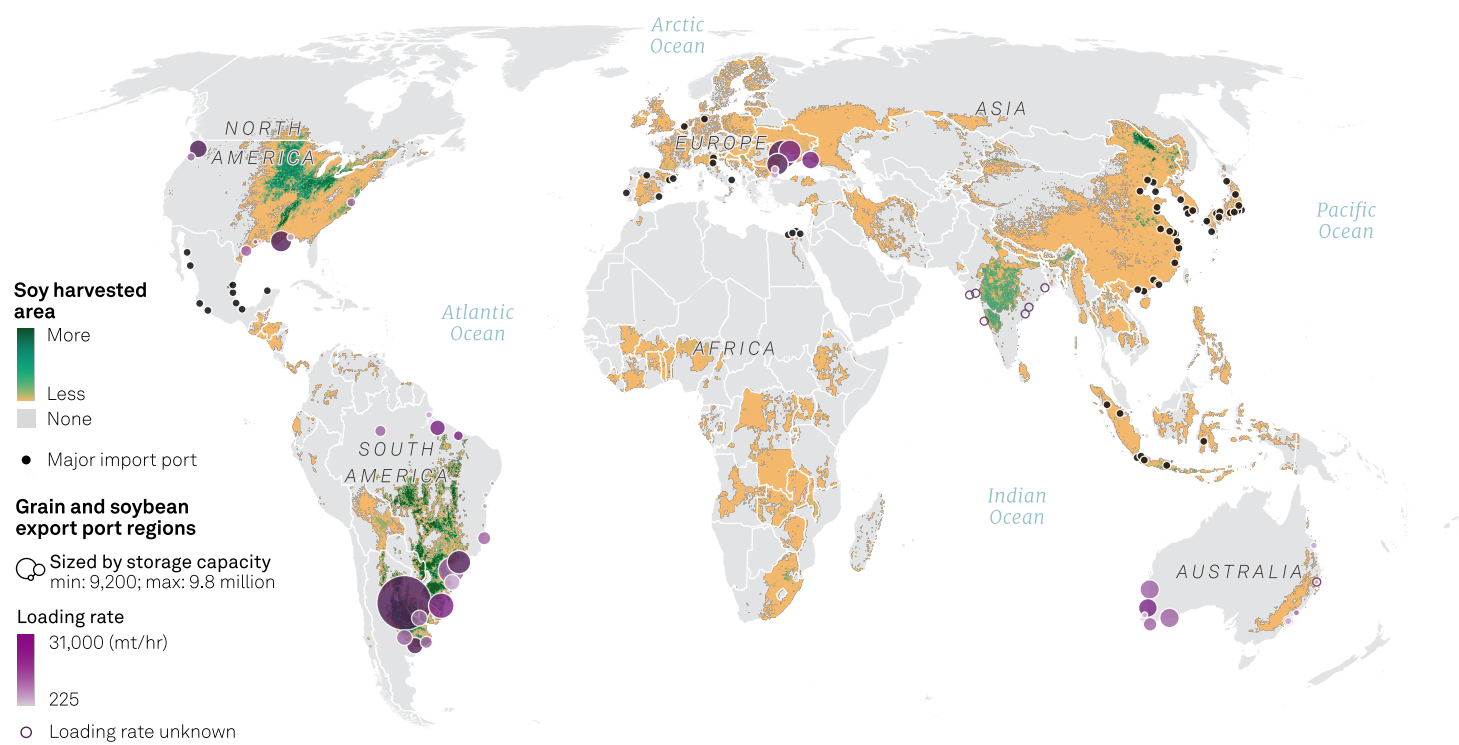
Soybean production is heavily concentrated in the Americas, which account for 80% of global output.

South America contributes more than half of that total, and North America just under a third. Brazil alone provides most of the world's traded soybeans, well ahead of the US. On the demand side, China buys more than half of globally traded soybeans.

Soybean availability in global markets follows a seasonal cycle driven by the crop calendars of the main producing regions. In the US, soybeans are typically planted between April and June, with the critical growth stage occurring in July and August.

Soybean production is heavily concentrated in the Americas, which account for 80% of global output.

Global soy production and ports

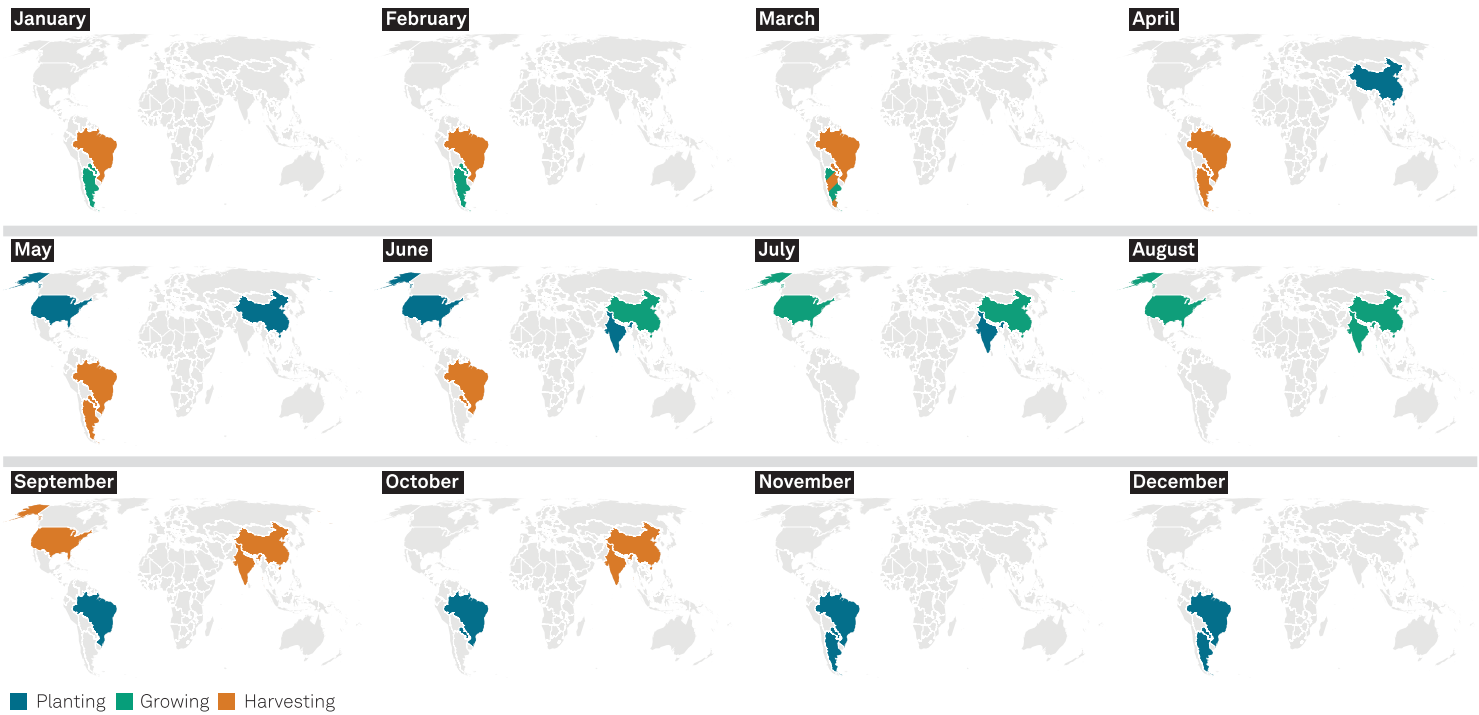


Credit: CI Content Design
Source: S&P Global Commodity Insights, Tang F. H. M., Nguyen T. H., Conchedda G., Casse L., Tubiello F., and Maggi F. (2023). CROPGRIDS

During this period, adequate rainfall is crucial, and any drought stress can significantly impact yields and global prices. Harvest usually takes place between September and November, when US soybeans begin to flow into international markets. In South America, the cycle is offset by several months due to its Southern Hemisphere growing season. In Brazil, planting begins around October, with the critical development period spanning

November to December. Harvest begins in January and peaks between February and March. Argentina follows a similar timeline but lags slightly behind Brazil. As a result, global soybean supply is relatively well-distributed throughout the year, with the US dominating exports in the final quarter and early part of the year, while South American crops begin to dominate trade flows from late Q1 through mid-year

Soybean crop cycle in key producers and exporters



Credit: CI Content Design
Source: S&P Global Commodity Insights, USDA

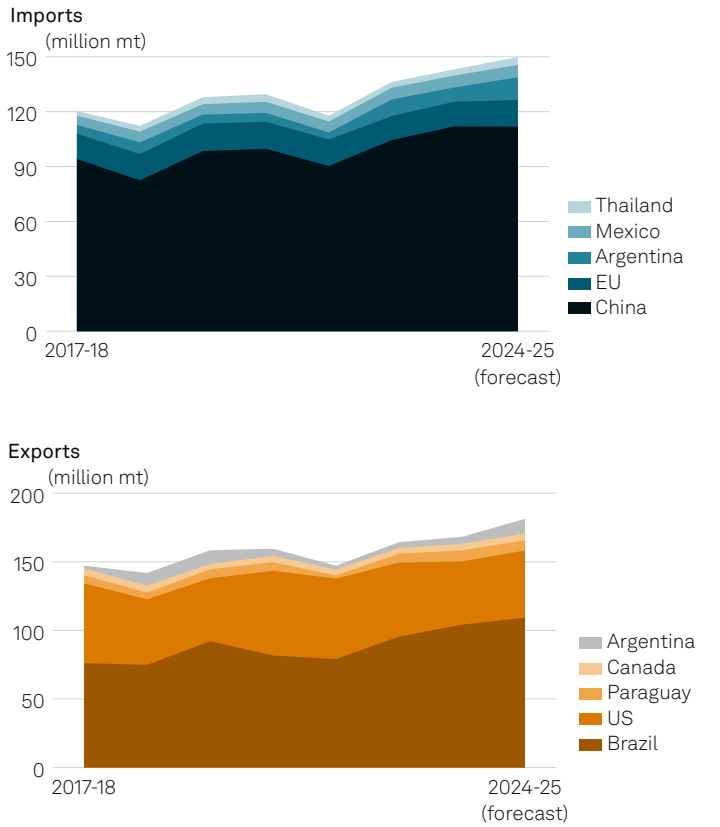
Trade flow

The most significant trade flow for soybeans is from Brazil to China, which represents over 40% of global trade in the oilseed. The soybean trade has grown sharply in recent marketing years. S&P Global Commodity Insights forecasts global exports for MY 2024-25 marketing year to reach a record high of 191 million mt, marking a 25% increase from MY 2017-18.

The 28 million mt increase was driven primarily by Brazilian soybeans, which accounted for 88% of the increase. Brazilian exports in 2024-25 are expected to be 43% higher than in 2017-18. To meet the rising international demand, Brazil has significantly expanded its planted area, experiencing the highest production growth among the top exporters.

In contrast, US soybean exports are expected to decline by 15% in 2024-25 compared to 2017-18, largely due to increased domestic crush driven by rising demand for soybean oil for renewable diesel, supported by policies like the Renewable Fuel Standard and the biodiesel blender's tax credit.

Soybean: largest importers and exporters



Source: USDA, S&P Global Commodity Insights

Brazil to China trade flow represents over

40%

of global trade in the oilseed

Key soybean price drivers

1. Policy

Biofuel policies and farmer incentives heavily influence soybean production and prices. In the US, biofuel mandates drive demand for soybeans as a key feedstock for biodiesel and renewable diesel. Similarly, Brazil's biodiesel blend requirements boost domestic soybean use.

February 2022

Russia-Ukraine war. The conflict disrupts grain and fertilizer supplies, driving up soybean demand as corn and wheat become less available.

December 2023

Lower US crushing demand. New Environmental Protection Agency blending mandates reduce US crushing demand, favorable weather boosts crops in Brazil and the US.

2. Tariffs and quotas

Trade restrictions, such as tariffs and quotas, heavily affect the soybean market, where few major players dominate. China's tariffs on US soybeans disrupted traditional flows, sharply cutting US exports while boosting imports from Brazil and Argentina. This shift has driven price changes and increased global market volatility and uncertainty.

October 2018

Soybean oversupply from trade dispute and strong harvest. A larger-than-expected US harvest during the US-China trade dispute led to an oversupply as US exports to China plummeted

3. Weather

Soybean plants require about 50-70 mm of rainfall a week during their critical growth period, which occurs primarily during flowering and pod development. Adequate rainfall is essential for maximizing yields, but excessive rainfall can cause flooding and harm root development, while drought can stress the plants, reduce pod formation, and lower yields. In Mato Grosso, Brazil, the critical period typically spans from November to December.

April 2020

China ramps up soybean imports post-ASF. To rebuild its hog herd after the 2019 African Swine Fever outbreak, China resumed large-scale soybean imports, including from the US.

December 2021

La Niña cuts Brazilian Soybean yields. Drier-than-usual conditions from La Niña reduced Brazil's 2021/22 soybean crop yields.

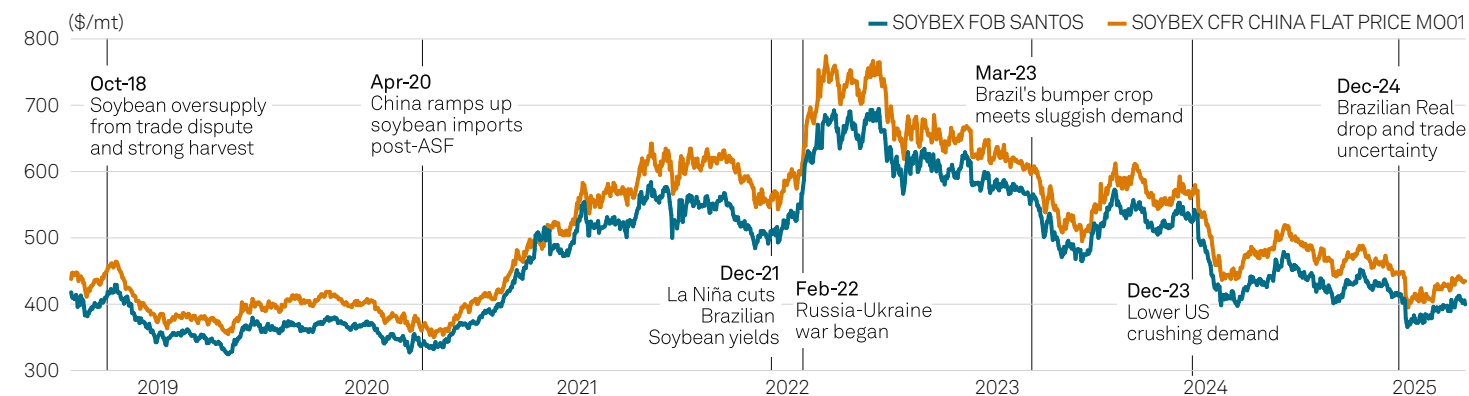
March 2023

Brazil's bumper crop meets sluggish demand. The record 2022/23 Brazilian soybean crop entered the market amid slower feed demand, especially from China.

December 2024

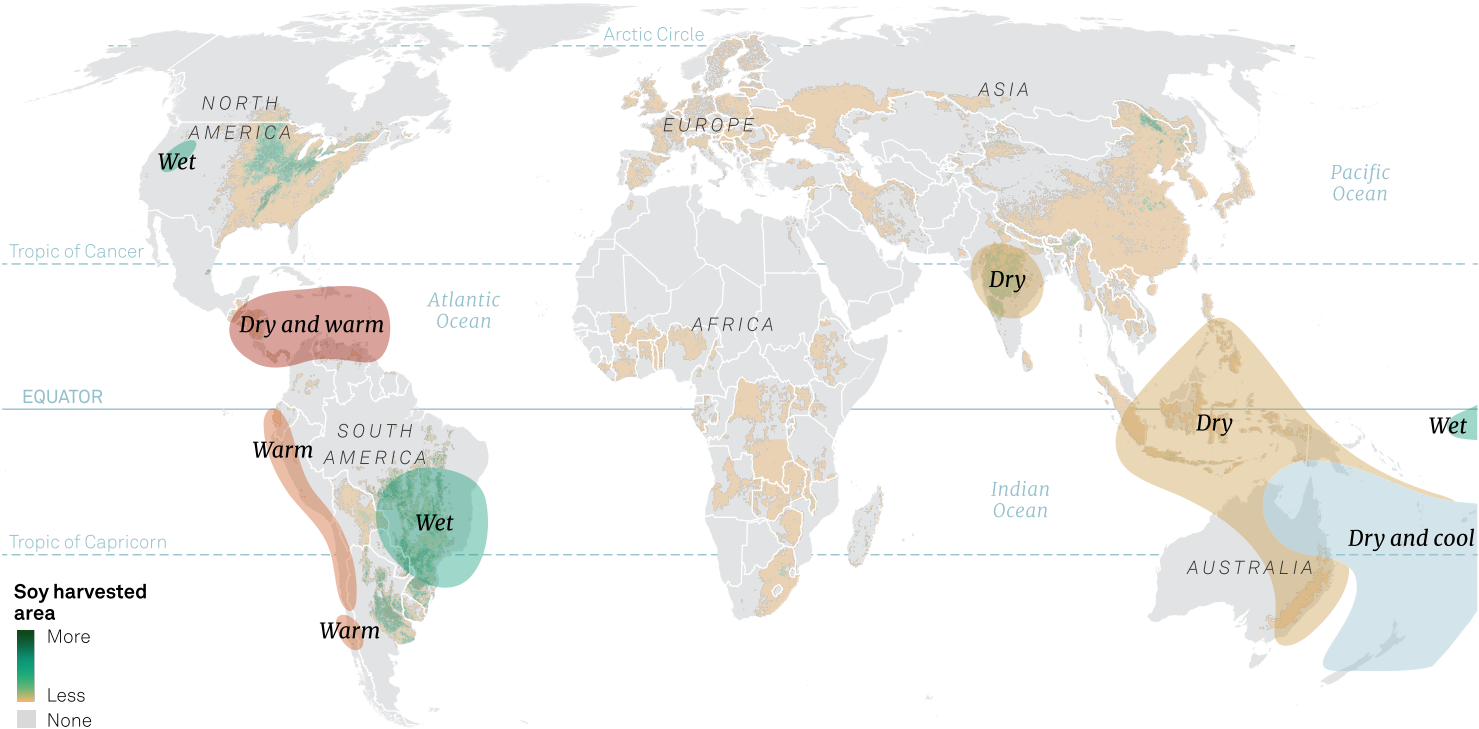
Brazilian Real drop and trade uncertainty. A 27.4% depreciation of the Brazilian Real in 2024, record-high global production, and potential new US tariffs from the incoming US administration reshaped the market.

Soybean: Key price drivers



Source: S&P Global Commodity Insights

Soy weather effects - El Niño summer



Credit: CI Content Design
Source: S&P Global Commodity Insights, NOAA, Tang F. H. M., Nguyen T. H., Conchedda G., Casse L., Tubiello F., and Maggi F. (2023). CROPGRIDS

Soybean Processing

The crushing industry processes about 86% of the global soybean harvest to extract soybean oil and soybean meal. The remaining 14% of the harvest is consumed directly as human food, animal feed, or seeds.

Historically, the value of soybeans has been primarily determined by its most significant byproduct: soybean meal. In 2000, soybean meal accounted for two-thirds of the value generated from crushing soybeans, while oil made up one-third. In recent years, however, oil has contributed about 45% of the value derived from soybean processing, which is nearing parity with meal.

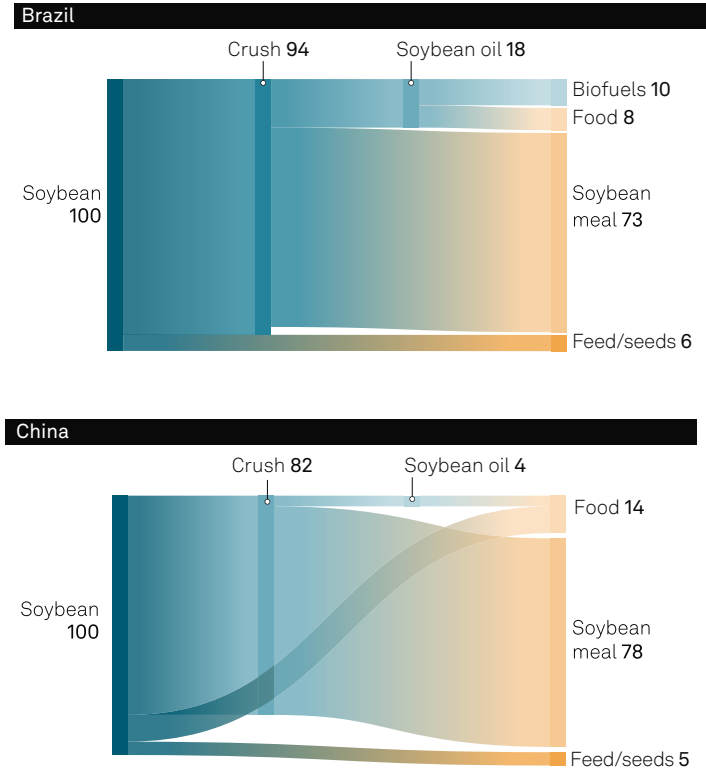
Oil has contributed about

45%

of the value derived from soybean processing

in recent years.

Processing Soybeans: Brazil and China



Source: S&P Global Commodity Insights

Soybean oil

On average, crushing soybeans yields 19% oil—significantly below the extraction rates of other oilseeds such as sunflower seed (42%) and rapeseed (41%). Soybean oil is in demand for both food and as a feedstock to produce biofuels.

China, the US, Brazil, India, and the European Union account for three-quarters of global soybean oil consumption, but they use it in different ways. While China and India use all soybean oil for food, the US, Brazil, and the EU split their consumption roughly equally between food and fuel. Overall, 78% of total soybean oil is used for food, while 22% serves as a feedstock for the biofuels industry.

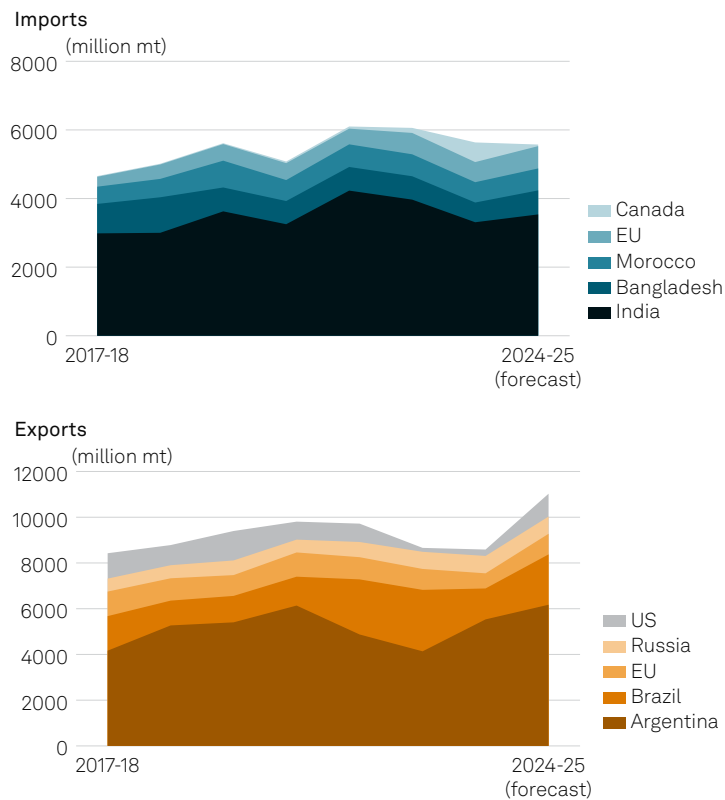
Argentina is the largest exporter, while India is the largest importer.

Soybean oil prices

The Platts benchmark assessment for Soybean Oil shows the FOB price at the Up River port areas—San Lorenzo, Rosario, and San Nicolás—along the Paraná River in Argentina.

Biofuel regulations in the US and Brazil influence the availability of soybean oil for international trade.

Soybean oil: largest importers and exporters



Source: USDA, S&P Global Commodity Insights

Soybean meal

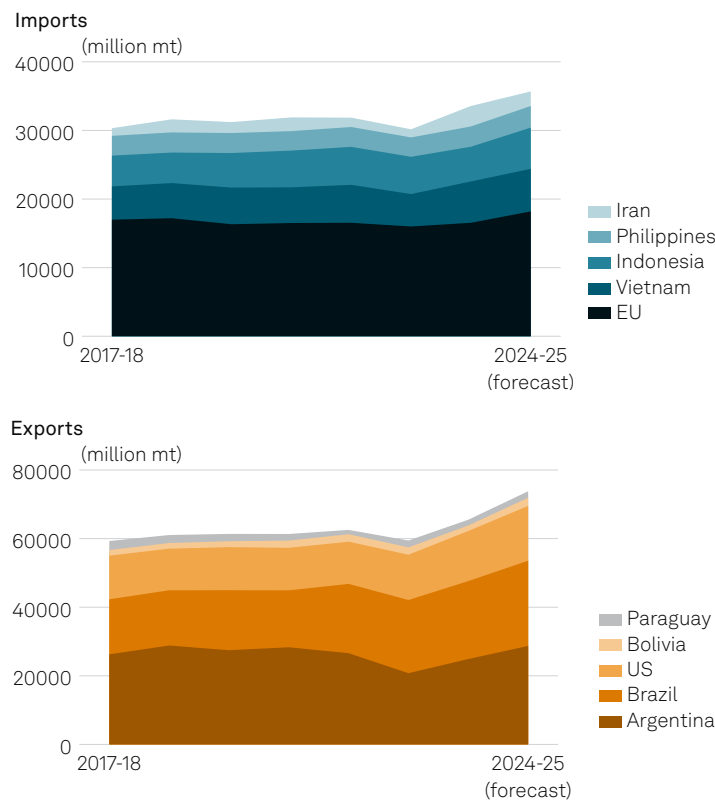
In addition to oil, soybean crushing produces about 78% soybean meal. Soybean meal is the leading protein source used in the animal feed industry. The largest meat-producing regions are China, the US, the EU, and Brazil. While China, the US, and Brazil have sufficient crushing capacity to produce enough soybean meal to meet their domestic feed demands, the EU does not. As a result, the EU has become the world's largest importer of soybean meal. Its primary supplier is Argentina—a country with significant crushing capacity, but relatively low domestic demand for soybean meal, due to its smaller population and meat industry compared with other major soybean-crushing nations.

With a crude protein content of 44-48%, soybean meal is rich in amino acids and serves as an excellent complement to lower-protein feed components such as corn. Soybean meal is highly digestible for monogastric animals, such as pigs and chickens, which contributes to its widespread use across various livestock sectors. Globally, the poultry industry is the largest consumer of soybean meal, followed by the pork, cattle (both dairy and beef), and aquaculture industries.

Soybean meal prices

The Platts benchmark assessment for Soybean Meal shows the FOB price at Up River port areas—San Lorenzo, Rosario, and San Nicolás—along the Paraná River in Argentina.

Soybean meal: largest importers and exporters



Source: USDA, S&P Global Commodity Insights

Corn

Credits: Samyak Pandey, Victor Pereira de carvalho

Contributors: Edward Low, Amrutha dileep Chingoroth

Corn is the world's most widely produced crop. Most of it is used for feeding livestock. In a normal year, the US is the largest exporter.

Global trade of corn is more diversified than for soybeans, the other key input for most animals. China produces 300 million mt of corn compared with less than 20 million mt of soybeans, so is a far less significant importer.

A wider pool of key exporters – the US, Brazil, Argentina and Ukraine – have a greater choice of customers, including Mexico, the EU, Japan and South Korea.

Large-scale cultivation of corn requires more fertilizer than soybeans.

As with other crops, Brazil's share of trade has trended higher as farmers bring more land into cultivation and improve yields.

Key properties

Corn production is heavily concentrated, with the US, China, Brazil and Argentina growing over 70% of global supply.

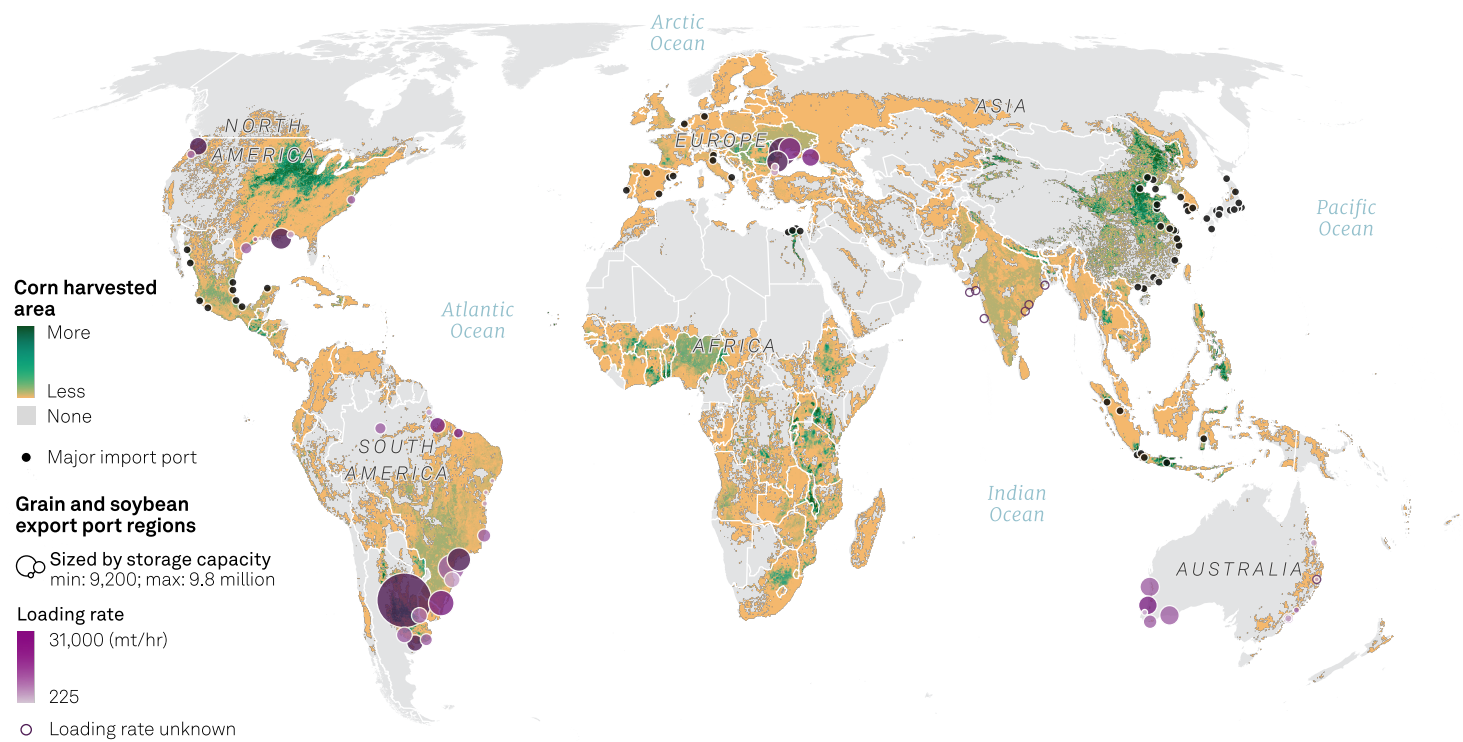
The US leads, bolstered by its Corn Belt in the Midwest, producing 31% of the world's output. China follows with about 24%, and Brazil and Argentina are significant players in South America that together account for about 15%.

The US is the top exporter, shipping around 16% of its production annually, with Mexico, Japan, and South Korea as key markets.

Mexico, which imports 5% of global corn, and parts of sub-Saharan Africa rely heavily on imports due to insufficient domestic production to meet demand, driven by population growth and limited arable land.



Global corn production and ports



Credit: CI Content Design
Source: S&P Global Commodity Insights, Tang F. H. M., Nguyen T. H., Conchedda G., Casse L., Tubiello F., and Maggi F. (2023). CROPGRIDS

Corn requires warm, temperate to subtropical climates, well-drained soils, and 60-100 frost-free days to thrive. In the US Corn Belt, planting occurs from April to May, with tasseling and silking in July, and harvest from September to October. US yields in 2024 averaged 183 bushels/acre, up slightly from 177.3 in 2023, despite early wet conditions in Iowa.

Brazil’s crop cycle has two seasons: safrá is planted September to November and harvested February to April, while safrinha is sown January to March and harvested June to August (CONAB, Brazil crop report, February 2024).

In 2024, the US faced a mixed season: early planting was hampered by wet conditions in parts of Iowa, but yields held strong at an estimated 183 bu/acre, up slightly from 2023. Brazil, however, saw its 2023-24 crop drop by 10% year over year, reducing output to 119 million mt. A drought in Mato Grosso, where rainfall was 30% below average during key growth stages, was responsible for the drop in production (CONAB, February 2024; INMET, 2024 Weather Summary).

However, Brazil is expected to produce 130 million mt in MY 2024-25, since planting was carried out within the ideal window. The climate will determine crop development in 2025.

Argentina’s MY 2023-24 output dropped 5% to 52 million mt, impacted by La Niña-induced dryness reducing yields by 8%

Brazil is expected to produce

130 million mt

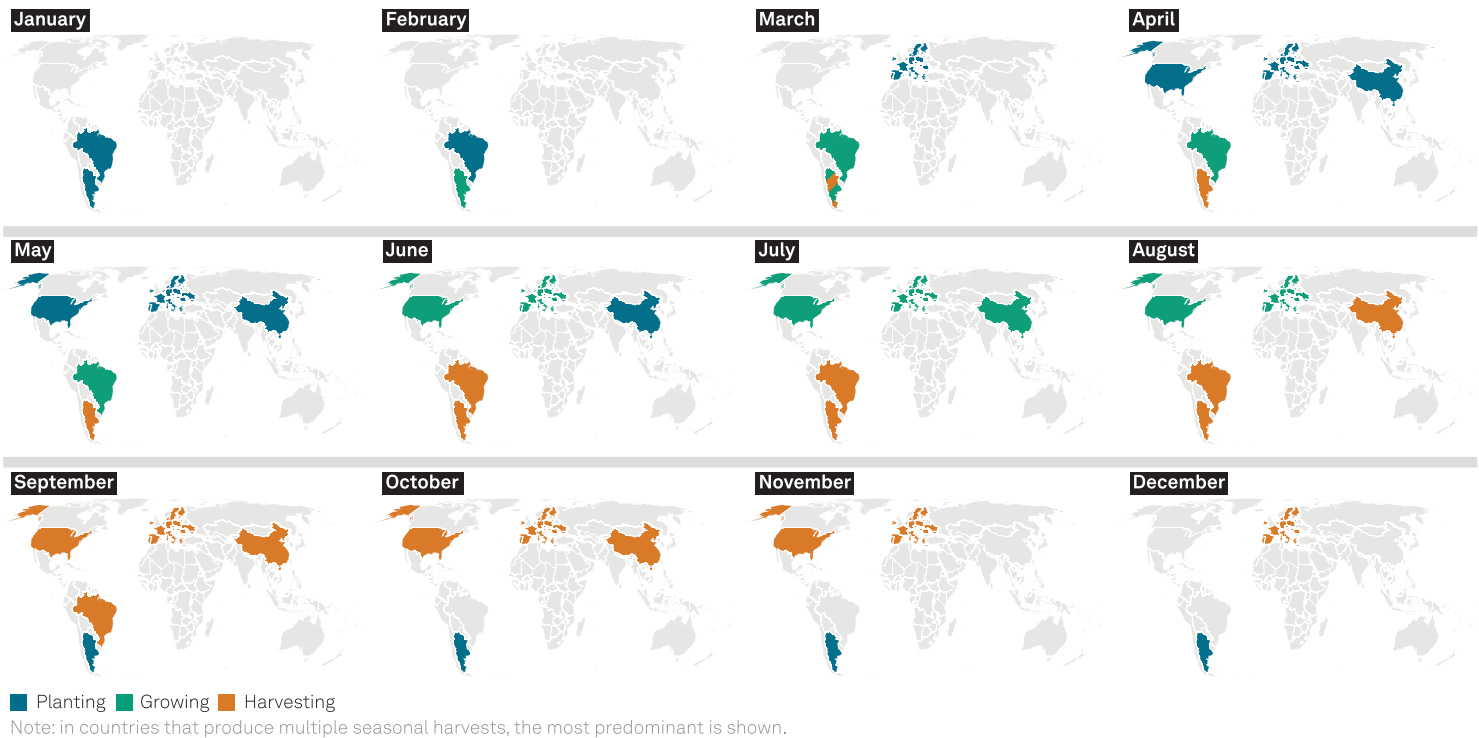
in MY 2024-25 , since planting was carried out within the ideal window.

in key provinces like Córdoba (BAGE, March 2024). Lower production of 47 million mt is expected for MY 2024-25 due to the smaller planted area in favor of soybeans.

Global corn supply tightens between July and September, as old-crop stocks wane and new harvests are still maturing. This period often sees price volatility. In July 2024, CBOT corn futures rose 12% amid concerns over dry weather in the US Midwest and Brazil’s reduced output.

Argentina, meanwhile, faced a 5% production dip in 2023-24 to 52 million mt due to La Niña-induced dryness, tightening export availability and pushing prices up further.

Corn crop cycle in key producers and exporters



Credit: CI Content Design
Source: S&P Global Commodity Insights, USDA

Trade flow

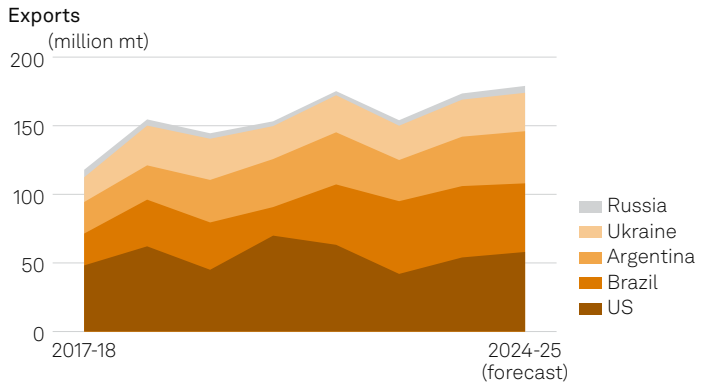
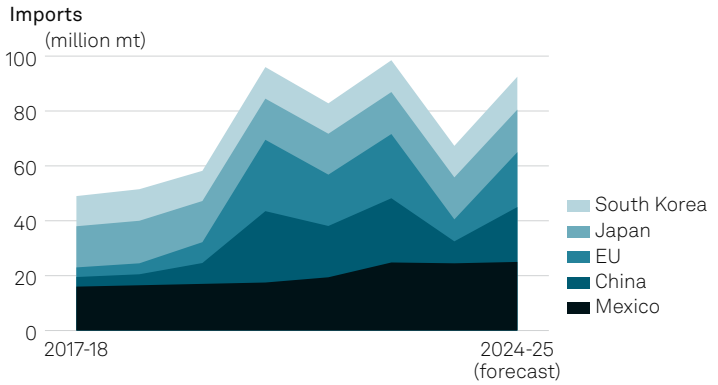
The flow of US corn to Mexico is the market’s most significant trade route, capturing 24.5 million mt in MY 2023-24 (September-August) or roughly 13% of global trade. Over the past five years, the **US has consistently been the largest exporter of corn to Mexico, averaging 20 million mt** and accounting for over 90% of Mexico’s total corn imports.

Brazil overtook the US as the world’s top corn exporter in MY 2022-23 for only the second time in history. The first being 2012-13 due to a U.S. drought. Mexico has increasingly relied on US corn due to its proximity, tariff-free access under the USMCA, and Mexico’s drought-driven demand for feed corn.

In recent years, as Brazil captured new markets like China with competitive pricing, Mexico faced occasional supply pressures from US planting declines and a strong dollar. During these periods, Mexico explored alternative sources like Argentina and Brazil, but the US remained the dominant supplier due to logistical advantages and established trade ties.

The European Union is the second-largest global buyer of corn, primarily sourcing around 55% of its total imports from Ukraine. The **US is the second-largest supplier** of corn to the European Union, accounting for about 17% of European imports. Asian countries including Japan, South Korea and China are also significant buyers of global corn exports. China is both the world’s second-largest corn producer and a key importer.

Corn: largest importers and exporters



Source: USDA, S&P Global Commodity Insights

The harvest outlook for China in MY 2024-25 is projected at 295 million mt, second only to the **US, which is expected to produce 378 million mt**. However, for the 2024-25 crop year, China is forecasted to be the fifth-largest corn importer, purchasing 7.2 million mt. This volume is significantly lower than the average of the past five years, during which China imported around 20 million mt. If China meets its projected harvest of 295 million mt in MY 2024-25, it will mark the largest harvest ever recorded in the country, reducing its import needs.

Currently, **China's record corn production** was in the previous crop year, MY 2023-24, when the country **produced 289 million mt**.

China's record corn production was

when the country produced

289 million mt

in the previous crop year, MY 2023-24

Price drivers

1. Policy

Corn is a key crop in addressing global food security, and demand is expected to keep growing.

Global annual feed use of corn is projected to rise 18.9% from 2025-26 to 947 million mt by 2034-35, according to USDA projections. As a result, several countries have developed policies that promote corn production and enhance self-sufficiency in

this important food source, particularly China, the second-largest corn producer in the world.

June 21, 2023 (ongoing)

US ethanol blending mandates. In June 2023, the Environmental Protection Agency announces a final rule to establish biofuel volume requirements for 2023-2025. Lower mandates for corn-based ethanol limited the use of corn in ethanol and created a surplus for export.

Dec. 10, 2024 (ongoing)

Brazil's Renova Bio program. In December 2024, the National Energy Policy Council approved new annual carbon reduction targets by RenovaBio with goals spanning from 2025 to 2034, which boosted the ethanol production in the country and increased the domestic use of corn.

March 5, 2025 (ongoing)

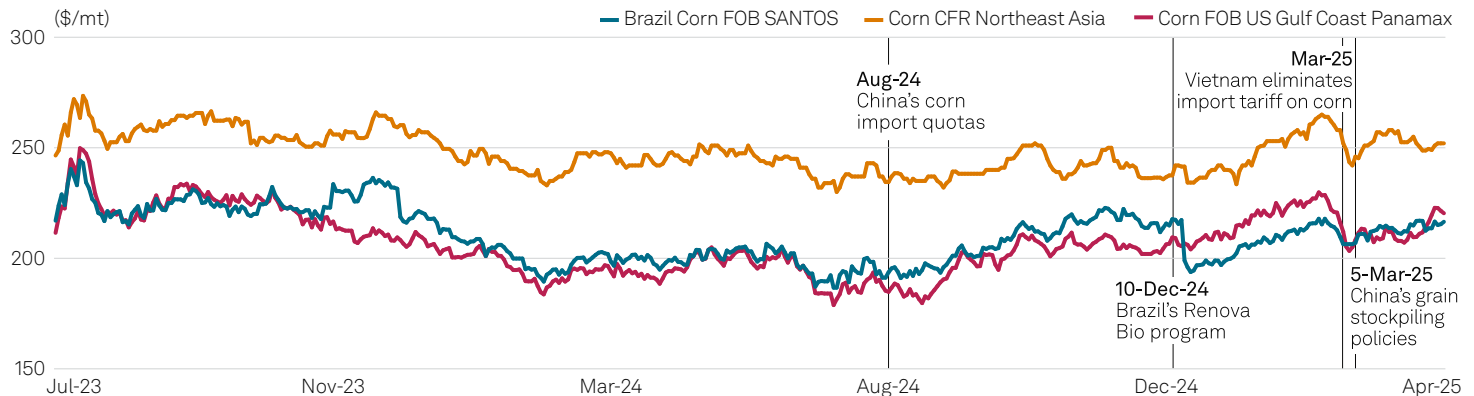
China's grain stockpiling policies. In March 2025, China raised its annual grain production target to about 700 million mt and expanded its agriculture stockpile budget, as it pushed for stronger measures to safeguard food supplies as tensions with trade partners intensify.

2. Tariffs and quotas

The US leads global corn-exporting countries, but President Donald Trump's tariff policies have created uncertainties around the flows. Brazil and Argentina are the second- and third-largest exporters of corn and have emerged as potential alternatives for corn supply to various markets, particularly China.

This has helped sustain corn prices in Brazil and Argentina, despite the advancing harvest in both countries, with expectations of a significant increase in corn supply during the months of April to August.

Corn: Key price drivers



Source: S&P Global Commodity Insights

December 2019 – January 2025

Argentina’s export tax on grains. Argentina cut its 12% export tax to 9.5% starting Jan. 27 through June. Traders have expressed renewed interest in selling corn.

February 2023 – February 2025

Mexico’s GM corn restrictions. The Mexican government lifted its 2023 ban on genetically modified corn import in February 2025. The end of the ban came into force days after the US and Mexico reached an agreement to postpone US tariffs on Mexican goods including corn.

August 2024 (ongoing)

China’s corn import quotas. Since August 2024, Chinese corn imports have fallen as the government tries to support local farmers and boost domestic corn. About 60% of the current 7.2 million mt import quota is set to be covered by the state-owned companies.

March 2025 (ongoing)

Vietnam eliminates import tariff on corn. In March 2025, Vietnam removed its 2% import tariff of corn. This allowed feed millers to import at lower prices, but downstream buyers began to seek price renegotiations.

Weather

Weather critically impacts corn production, affecting yield and quality. Shifting weather patterns also introduces pests and diseases. Corn is sensitive to weather: extreme heat during pollination cuts yields, as seen in the 2024 U.S. Midwest heatwave. Drought stresses crops, while heavy rains, like those in Brazil in early 2025, delay harvests and lower quality, affecting exports to China.

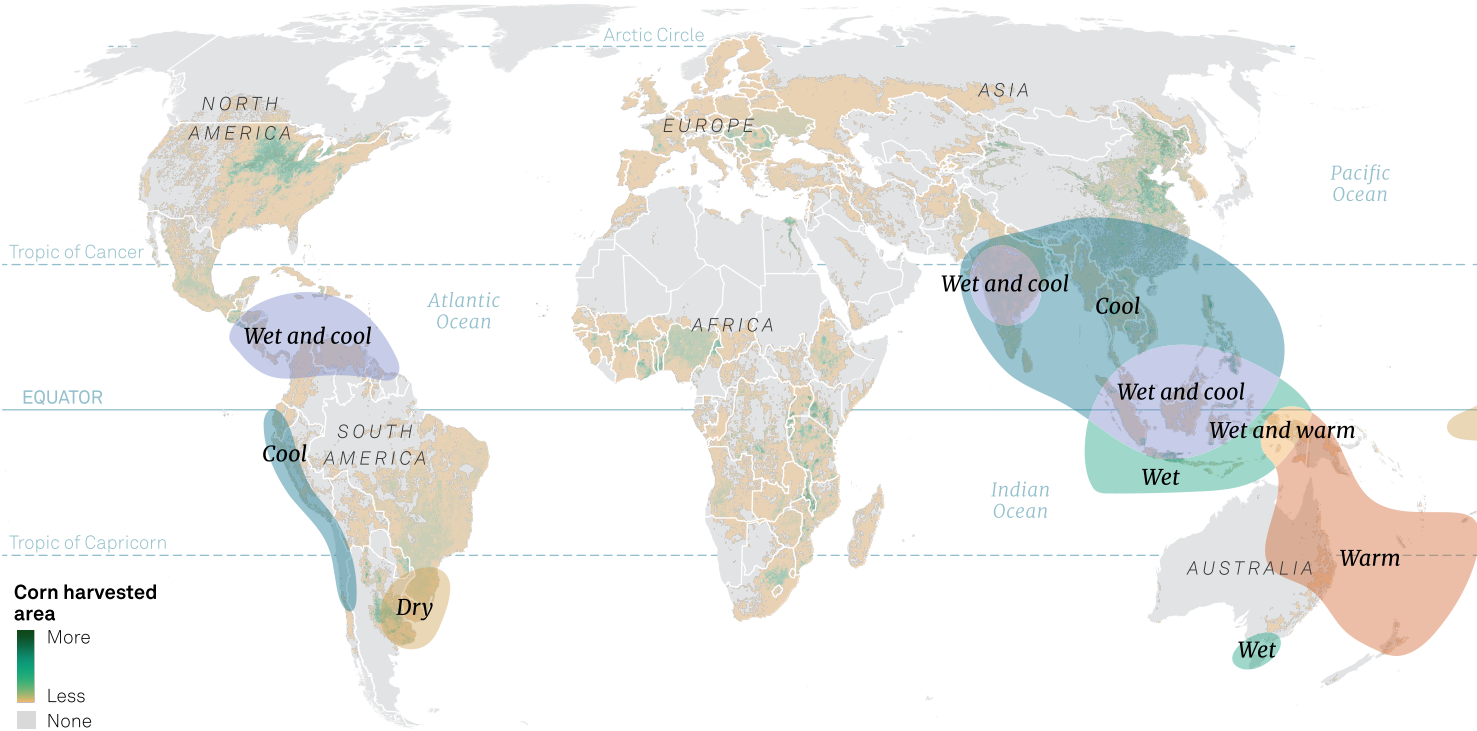
US Corn belt weather variability: The US Corn Belt experienced significant weather fluctuations in 2024, including extreme heat and variable rainfall. This led to regional disparities in corn yields, with some areas achieving impressive outputs of 270-300 bu/ acre, while others faced reductions due to drought and disease pressures.

El Niño and La Niña Global climate patterns, particularly El Niño and La Niña, have influenced Midwest weather. For instance, the transition from an El Niño winter to a La Niña summer has often resulted in hot and stormy conditions in the Corn Belt.

Super El Niño 2023/24: Began September 2023, peaking in December 2023 and persisted in April 2024. Weak La Niña by August 2024

South American production shifts Brazil and Argentina have seen changes in their corn production due to weather variability.

Corn weather effects - La Niña summer



Credit: CI Content Design
Source: S&P Global Commodity Insights, NOAA, Tang F. H. M., Nguyen T. H., Conchedda G., Casse L., Tubiello F., and Maggi F. (2023). CROPGRIDS

Favorable climatic conditions in Brazil led to a 9.4% increase in corn production during the 2021-22 harvest, despite a 2.3% reduction in sown area. Such production shifts influence global supply and trade dynamics, as these countries are major corn exporters.

Brazil had weak **La Niña August 2021-April 2022** brought above-average rain to Brazil's Midwest. Argentina La Niña (August 2021-April 2022) cut rainfall 30%-40% below normal in Pampas.

Processing corn

Corn, also known as maize, is processed in two primary ways: wet milling and dry milling. In wet milling, corn is steeped in water and then separated into starch, fiber, protein (gluten), and oil. This process yields high-fructose corn syrup, corn oil, ethanol, and byproducts like corn gluten feed and meal.

In dry milling, commonly used in the US, corn is ground to produce ethanol, distillers dried grains with solubles (DDGS), and carbon dioxide. According to the USDA, nearly 40% of U.S. corn production is used to produce ethanol. The US is the world's largest producer and exporter of corn and also dominates the global ethanol market, with Chicago serving as a key benchmark location for corn and ethanol pricing.

Brazil, another major player, uses corn increasingly for biofuel, particularly in its Center-West region, with support from RenovaBio.

For every metric ton of corn processed in **dry milling in US, about 378 liters of ethanol, 17 kg of corn oil, and around 320 kg of DDGS** are produced (USDA, 2024). DDGS are used in animal feed, adding value to the ethanol production chain.

This **translates to approximately 29.8% of the corn mass going into ethanol, 1.7% into corn oil, and 32% into DDGS.**

Approximately

28.9%

of the corn mass going into ethanol,

1.7% into corn oil, and 32% into DDGS.

The remaining 36.5% accounts for moisture loss, carbon dioxide released during fermentation, and other minor byproducts.

By comparison, milling one metric ton of corn in **China** typically yields about 650 kg of starch, 100 kg of corn oil, 200 kg of DDGS, and 50 kg of other byproducts, though exact ratios vary by mill efficiency.

These figures correspond to 65% starch, 10% corn oil, 20% DDGS, and 5% other byproducts.

The main products from corn processing are ethanol and DDGS. Ethanol is blended into gasoline for energy security and emissions reduction, mainly sold through refiners and fuel retailers. Pricing is market-based in the US, but government blending mandates influence demand.

DDGS are distributed through bulk transport and exported to markets like China and Vietnam.

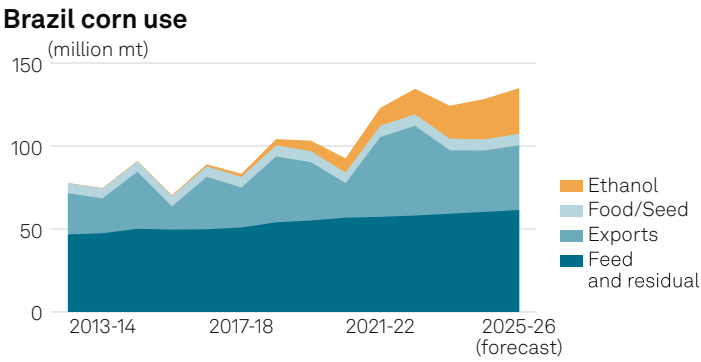
Corn is also critical in animal feed. Its high energy content makes it a staple for poultry, hog (pork), and cattle (beef). It provides carbohydrates necessary for growth and weight gain, especially in the early stages of development.



Corn's versatility extends beyond feed and fuel. Cornstarch thickens soups, HFCS sweetens sodas, and corn oil fries snacks.

Substitutes include sorghum, barley, and wheat, used depending on price and availability. Corn also appears in numerous everyday products cornstarch, sweeteners, cereals, and snacks demonstrating its vast implication in global food and energy systems.

An example of corn usage over time is the rapid increase in its utilization for ethanol in Brazil, as shown in chart above. In the MY 2012-13, production was nearly zero at 0.1 million mt, and it is expected that by the MY 2025-26, corn usage for ethanol will reach 20% of the total in the country.



Wheat

Credits: Aditya Kondalamahanty and Vivian Iroanya

Contributors: Vivien Tan

Wheat is the world's most important grain for human consumption. The Middle East and North Africa are supplied from the Black Sea.

It requires a temperate climate with moderate rainfall during the growing season from autumn to spring. In the months before it is harvested, temperatures should be around 20°C to 25°C.

China and the EU are the world's largest wheat producers, producing a third of the global total between them. China still consumes more wheat than it grows, while the EU is the world's second largest exporter behind Russia, whose southern region is well suited for growing wheat and sparsely populated.

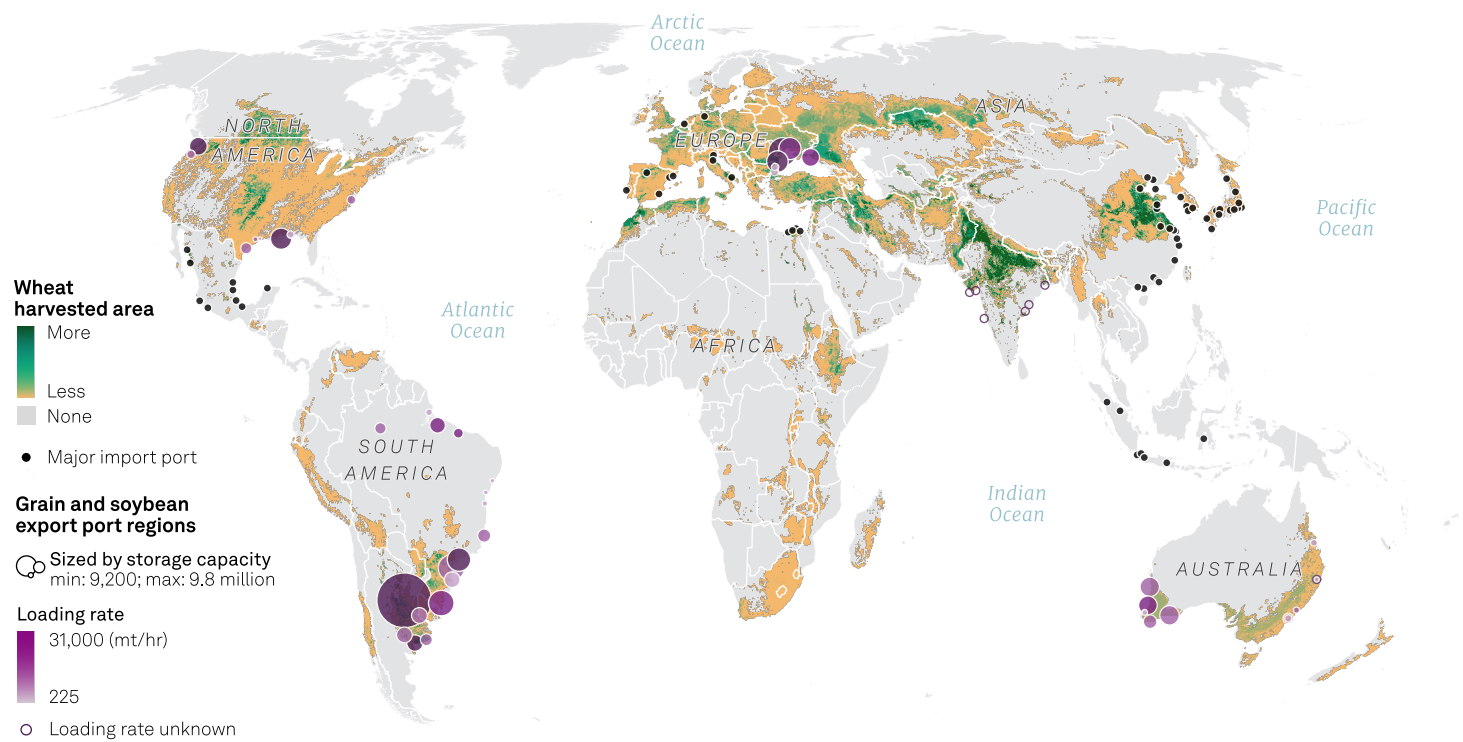
Those exports are important for the Middle East and Africa, where the needs of large populations cannot be met with the meager output from arid land and excess heat. Here, state grain boards are often responsible for procuring imports and underwriting subsidies programs. In Asia, Indonesia also has a similar imbalance between consumption and production thanks to a tropical climate that does not support wheat.

The Black Sea is particularly important for global wheat trade. Wheat here is planted from September to October and harvested in July.

Global wheat supply is often tightest between April and June, as old-crop stocks dwindle and uncertainty about weather conditions looms over the upcoming harvest. During this period, prices can spike dramatically.

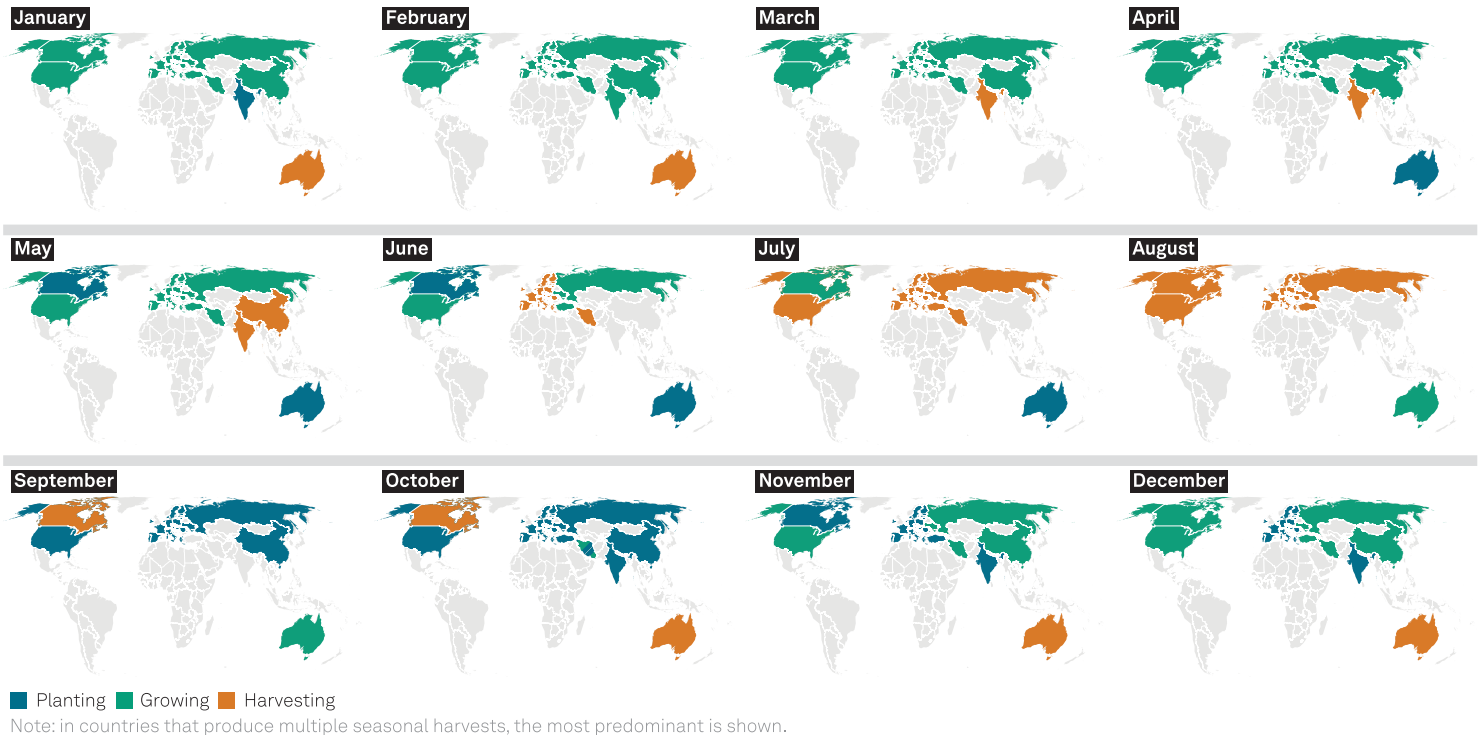


Global wheat production and ports



Credit: CI Content Design
Source: S&P Global Commodity Insights, Tang F. H. M., Nguyen T. H., Conchedda G., Casse L., Tubiello F., and Maggi F. (2023). CROPGRIDS

Wheat crop cycle in key producers and exporters



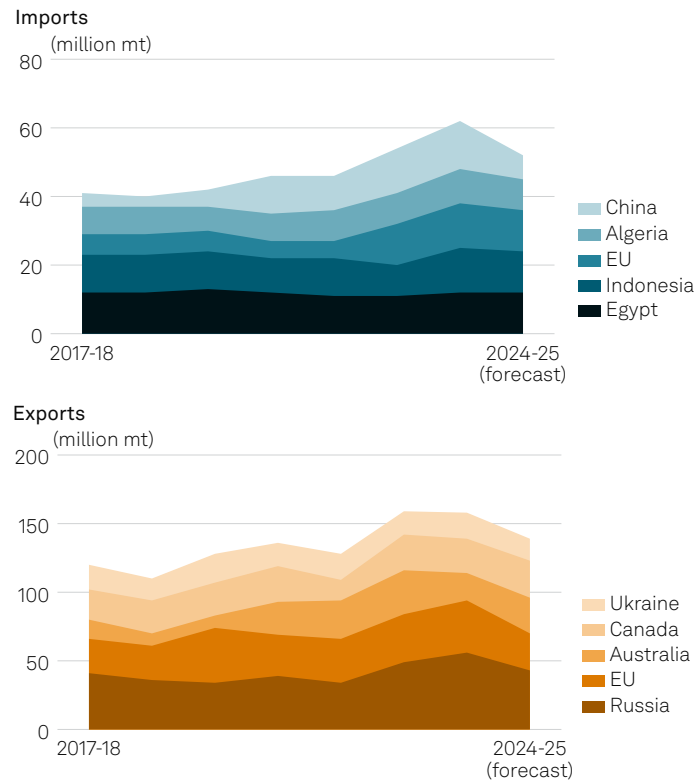
Credit: CI Content Design
Source: S&P Global Commodity Insights, USDA

Trade flow

Around 220 million mt of wheat was traded between countries in the 12 months to June 30, 2024. The five largest exporters – Russia, the EU, Australia, Canada and Ukraine – supplied the bulk of globally traded wheat. Trade is less concentrated on the import side, with the five buyers – Egypt, Indonesia, Algeria, the EU and China – accounting for 28%. Russia has been the world’s largest exporter of wheat since MY 2017-18. That followed a surge in production, with yields almost doubling between 2000 and 2017, as the country’s farmers applied the latest technology, including pesticides and sensor-equipped tractors. Russia’s share of exports has mostly continued to grow since then. Its most significant customer is Egypt, which captured 8.2 million mt in MY 2023-24, or roughly 3.7% of global trade. Over the past five years, Russia has consistently been the largest exporter of wheat to Egypt, averaging 6.72 million mt annually and accounting for more than half of Egypt’s total wheat imports. Despite the ongoing Russia-Ukraine war, Egypt has increasingly relied on Russian wheat due to its competitive pricing and high quality compared to other global sources.

When the Russian government imposed an unofficial price floor to prevent the sale of low-priced wheat, Egypt faced some challenges in its procurement strategy in tenders. During this period, the Egyptian state, which buys half of the country’s wheat imports, sought alternative, cheaper sources from Ukraine, Bulgaria, and Romania. However, even with these challenges, Russia continues to be the most significant supplier of wheat to Egypt.

Wheat: largest importers and exporters



Source: USDA, S&P Global Commodity Insights

Key wheat price drivers

1. Policy

Russia and Ukraine together account for more than a third of the global wheat trade. The war, financing constraints and their respective relationships with other countries has driven price moves since 2022. Russia’s wish to ensure profits for domestic farmers has also become a concern for importers who rely on this supply.

Feb. 24, 2022 (ongoing)

Russia-Ukraine war began. Within a week of Russia’s February 2022 invasion, Platts-assessed Russian and Ukraine wheat export prices surged by 26% amid fears of tightening supply.

March 28, 2023 (ongoing)

First talks of a Russian wheat price floor. In March 2023, an unofficial price floor for Russian wheat set by the government led to higher state tender prices, causing buyers like the Egyptian state to seek alternative origins such as Romania, Bulgaria and Ukraine wheat. To circumvent the FOB restrictions, exporters began offering discounted CNF prices in private deals.

Aug. 1, 2024 (ongoing)

China’s increasing domestic self-sufficiency strategy. A bigger domestic wheat crop in China, on top of slow downstream demand, resulted in smaller imports of Australian wheat in late 2024 and into 2025, adding pressure to Australian wheat prices and narrowing the Australia-Russia price spread.

2. Tariffs and quotas

Wheat policy is intertwined with geopolitics, given its importance to food security, trade and potential conflict. Rising wheat prices were the backdrop for protests in the Middle East in the early 2010s. Governments use trade restrictions and subsidies to provide farmers with a stable income or consumers with cheaper bread.

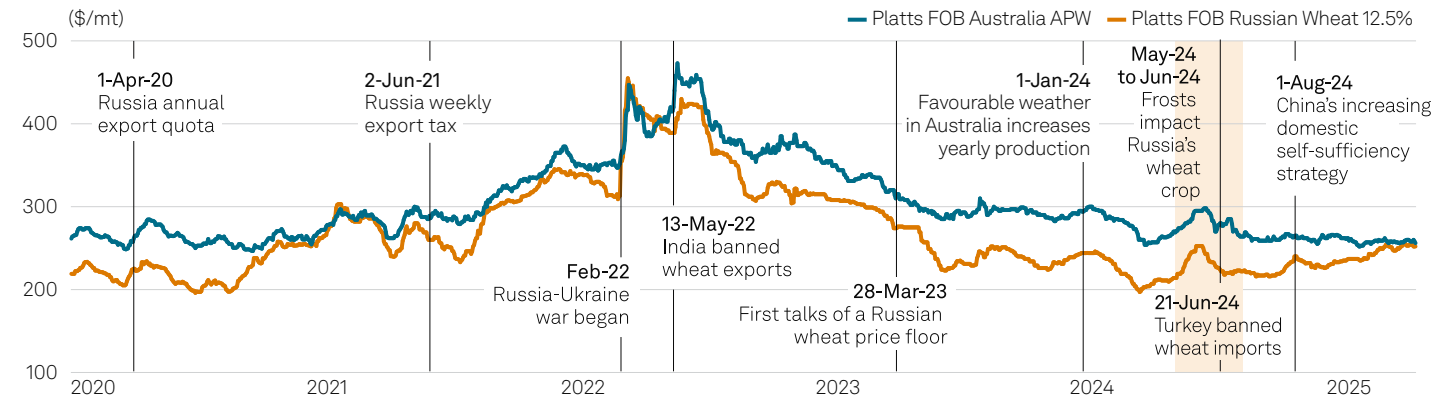
April 1, 2020

Russia annual export quota. Russia introduced an export quota, effective from February to June each year, to maintain adequate wheat supplies domestically and prevent price increases. This often leads wheat sellers to accelerate exports in the first half of the season, resulting in lower export prices.

June 2, 2021

Russia weekly export tax. Russia also introduced an export tax to stabilize domestic prices, combat food inflation and increase availability of wheat domestically. This is published every week using a base price of Rb 18,000/mt and average FOB export prices for the past 60 days.

Wheat: Key price drivers



Source: S&P Global Commodity Insights

May 13, 2022

India banned wheat exports. Wheat prices surged again in 2022, just three months into the Russia-Ukraine war, when India banned exports after an extreme heat wave affected the local crop. Platts-assessed Australian APW and Russian wheat surged 3.4% and 6.2%, respectively, within a week of the ban.

June 21, 2024

Turkey banned wheat imports. Citing a need to protect domestic production, Turkey suspended wheat imports starting June 21, then introduced a series of import quota measures from Oct. 15, 2024 to March 19, 2025. Platts-assessed CIF Marmara, Turkey 12.5% fell 8.33% when the import ban was in effect.

3. Weather

As wheat develops, it is sensitive to weather conditions. Extreme cold during winter dormancy can lead to winterkill, while drought can significantly reduce yields. Frosts late in the crop year are also a problem, as France experienced in May 2024, weakening demand from its top importer Morocco.

May 1, 2024 - June 30, 2024

Frosts impact Russia's wheat crop. Russia's production fell nearly 10% due to May 2024 frosts. Platts-assessed Russian 12.5% rose 18% that month as a result.

Jan. 1, 2024

Favorable weather increases Australian output. Australia's production increased 31% for MY 2024-25 (October-September), driven by favorable weather throughout 2024, particularly October rainfall that boosted crop prospects in Western Australia. However, average protein content declined despite improved yields.

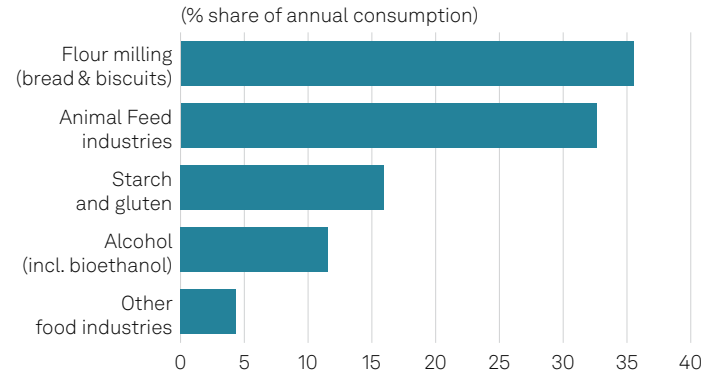
Processing wheat

Wheat is processed into two main products: flour and bran. The milling process begins with cleaning the wheat grains to remove impurities, followed by conditioning to ensure optimal moisture content. The grains are then ground into flour, separating the endosperm from the bran and germ. The main products derived from this process are flour for human consumption, and bran, commonly used as animal feed.

In the European market, a significant portion of wheat is also allocated for biofuel production, in countries like Germany and France, where sustainability initiatives have increased the demand for biofuels.

Egypt imports about 12 million mt of wheat annually for flour processing. The imports are split evenly between the state and private sectors. The state imports wheat to subsidize flour for Baladi bread, a staple for most Egyptians, while private importers cater to various sectors: about 15% for flour exports, 33% for industrial uses like pasta and biscuits, and 53% for bakeries and direct consumers.

Food, feed and fuel: Wheat consumption in France (2023-24)



Source: Intercereales

When milling one metric ton of wheat, a privately owned mill in Egypt produces around 720 kg of flour and 280 kg of bran. In contrast, state-owned mills, which focus on Baladi bread, achieve a higher extraction rate of 870 kg of flour.

Alongside bran, lower protein wheat plays a crucial role in animal feed. It is an important component due to its high energy content and digestibility, making it a valuable ingredient in livestock diets like poultry and swine, as it supports growth and development

during critical stages. For example, young chicks and piglets benefit from wheat's energy-dense properties, promoting healthy growth and weight gain. In some countries, such as Indonesia 2.6 million mt is utilized for this purpose.

France is the largest wheat producer in the EU. France's wheat processing is pivotal for domestic use in flour milling, animal feed, starch and gluten manufacturing, and alcohol production, including bioethanol.

Meat production

Credits: Graham Style, Beatriz Baltieri (Chicken), Renan Araujo (Beef), Desiré Sigauco and Nuo geng Chen (Pork)
Contributors: Yuh nien Chow

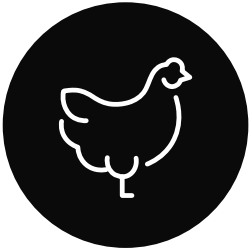
The US, Brazil and the EU lead exports for chicken, beef and pork, respectively.

Beef is typically more expensive than pork and chicken. In Australia, cattle must be fed 6 kg of feed and fodder to add 1kg in weight. That multiple, known as the feed conversion ratio, is around two for pork in Spain and chicken in Brazil.

Of the three proteins, poultry often has the most consolidated supply chains with many of the largest processors also producing feed. For pork and beef, where animals the age at harvest is significant, the cattle cycle plays out over several years, magnifying supply and demand imbalances. Finally, cows, pigs and chickens are all sensitive to disease, and China's outbreak of African swine fever constrained demand for feed for several years.



I Chicken

Key properties: Chicken					
	Consumption	Feed conversion ratio	Age at harvest	Most-commonly traded form	Typical feed consumption (%)
	(per capita /kg per year)	(kg feed/1 kg weight gain)	(months)		
	45.1	1.7	1.5	- Skin-on boneless legs - Skinless boneless breast - Feet and paws - Wings	Wheat0 Corn56.5 Soybean34.9 Others8.6

Key properties

Chicken is the most traded protein globally and the second most produced. The US contributes over 20% of worldwide poultry production, yet it consumes more than 85% of its total output. Brazil ranks as the third-largest poultry producer, following China, and the leading exporter, responsible for 35% of total chicken exports in 2024.

The poultry production cycle spans approximately 45 to 50 days from hatching to harvest. Feed constitutes the largest production expense, accounting for nearly 70% of total costs, depending on the region. Typically, chicken feed in Brazil consists of 56%-60% corn and 30%-35% soybean meal.

Frozen cuts dominate chicken exports, with Brazil's most traded product being boneless chicken breasts, primarily imported by Saudi Arabia, Mexico, the UAE, and the EU. Boneless chicken legs are also significant, with Japan importing 50% of the total.

Poultry serves as a crucial source of animal protein in many regions and remains the world's most affordable protein option. In Brazil, per capita poultry consumption in 2024 was 45.1 kg/hab, while in the US, it exceeded 54 kg/hab annually, largely due to a significant reduction in beef supply, which has shifted domestic demand toward chicken. Asian countries, such as Japan and China, consumed 23.6 kg and 10.67 kg/hab, respectively. The EU also plays a notable role in consumption, with an average of 23.3 kg/hab in 2024.



The US contributes over

20%

of worldwide poultry production.

Key poultry price drivers

1. Policy

Policies play a crucial role in global poultry supply and demand dynamics.

Brazil's export halts in 2024 significantly reshaped supply during the period of enforcement, exerting downward pressure on prices.

July 19-25, 2024

In July 2024, Brazil voluntarily suspended poultry exports to 44 countries after confirming a Newcastle disease case in Rio Grande do Sul. Once the ban was lifted 25 days later, prices began to decline due to an oversupply created by the backlog of shipments sent simultaneously to their destinations. The Platts price assessment for boneless chicken breasts CIF Middle East fell by \$200/mt over the month of July 2024.

2. Tariffs and quotas

Tariffs impact the poultry sector by increasing import costs, which can boost domestic production and protect local producers. However, this often results in higher consumer prices and market distortions. Tariffs can also provoke retaliatory measures from trading partners, complicating export opportunities and disrupting global supply chains.

Feb. 24, 2023 (ongoing)

EU and UK maintain TRQs on Brazilian chicken. The EU and UK continue to impose tariff-rate quotas on Brazilian chicken, limiting volumes that can enter at lower tariffs. This has restricted Brazil's ability to expand in high-value markets and shifted trade flows to Asia and the Middle East.

Jan. 1, 2024 (ongoing)

Saudi Arabia boosts domestic poultry production. Under its Vision 2030 strategy, Saudi Arabia increased local poultry support and tightened import quotas. As a key growth market for Brazilian exporters, this change redirected whole chicken trade to other destinations and contributed to a more competitive export environment.

3. Weather

Weather can significantly impact poultry prices by affecting production yield, feed costs and supply and logistics. The floods in Rio Grande do Sul state in Brazil, for example, disrupted production and damaging infrastructure. Feed supply was affected, raising costs for producers. Transportation challenges hindered product distribution, resulting in supply shortages and higher prices in local and export markets.

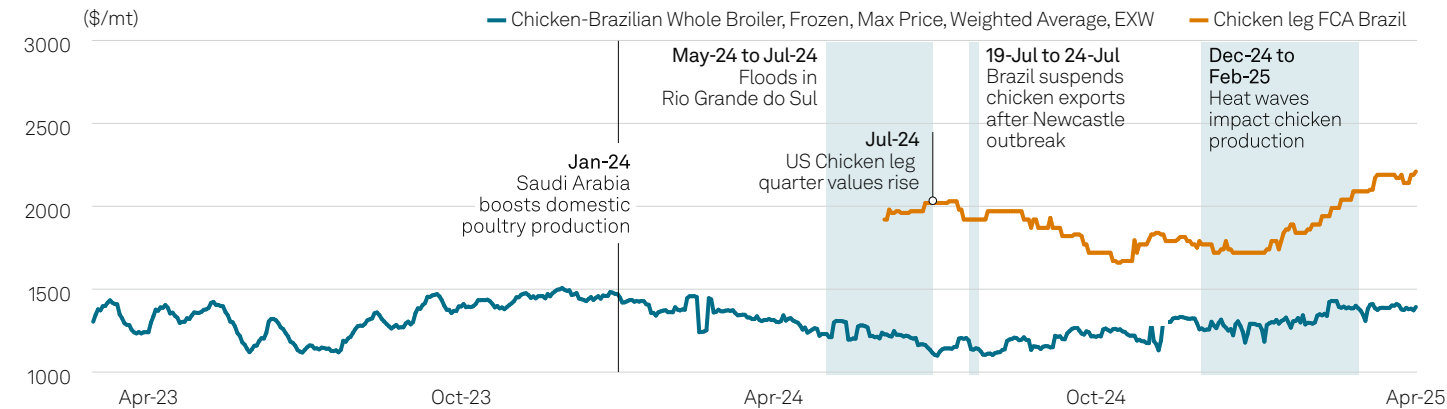
December 2024 - February 2025

Heat waves impact chicken production. Heat waves among the production regions in Brazil have hurt chicken and egg production, significantly increasing mortality and reducing egg productivity.

May - June 2024

Floods in Rio Grande do Sul. Flooding caused an estimated Real 182.9 million in damages to the poultry sector in Rio Grande do Sul, including structural damage to 200,000 properties and the loss of over 1 million chickens. Producers faced Real 13.61 million in damages to genetics and fertile eggs, severely impacting operations.

Chicken: Key price drivers



Source: S&P Global Commodity Insights

4. Disease

Disease outbreaks, such as bird flu in the US and Poland, significantly impact global poultry prices by reducing supply through flock culling and production losses. Import bans from affected regions further constrain supply, leading to price volatility. EU chicken breast prices increased in response to supply shortages from Poland, its main supplier, redirecting its demand to Brazil and further supporting prices.

July 17 - 25, 2024

Newcastle outbreak halts exports. A Newcastle disease case on a commercial farm triggered an immediate export suspension to dozens of countries. Roughly 7,000 birds were culled in Anta Gorda, Rio Grande do Sul. Exporters faced logistical delays and price uncertainty until restrictions were lifted after containment was confirmed.

“Brazil’s exports to China are the most significant trade flow in the global poultry market, representing 4% of global exports, according to USDA data.”

Brazilian chicken imports to China grew at an average rate of 14.5% driven by increased demand

March 2025

US chicken leg quarter values rise in March even as exports continue to decline: USDA. In March, US frozen chicken leg quarter exports fell to 106,000 mt, the lowest in nearly five years, yet the value reached its highest since Q3 2022 at \$1,144/mt. Bird flu has impacted global marketability. China, for example, has banned imports of chicken from 36 US states, including all of the largest producers such as Georgia, Alabama and Arkansas.

Trade flow

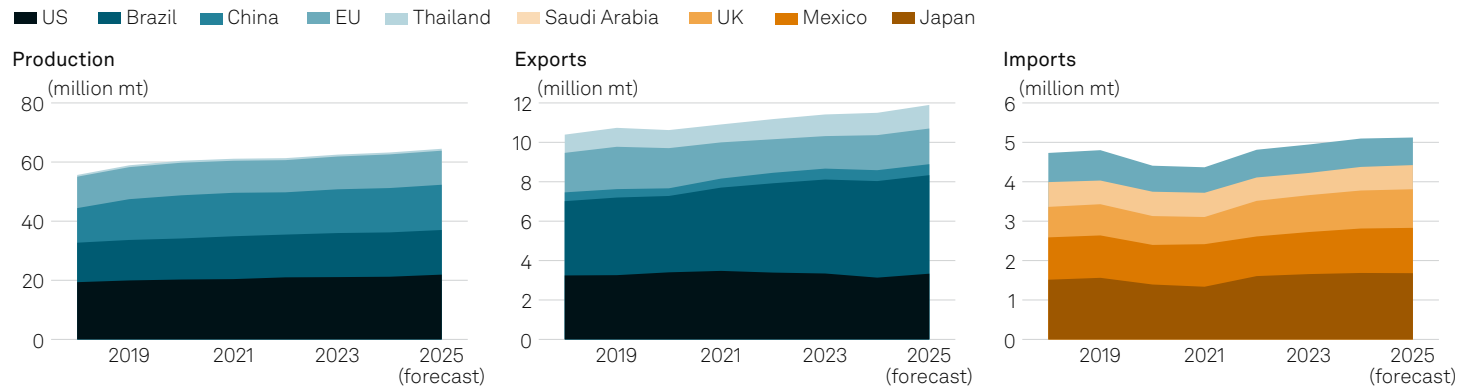
Brazil’s exports to China are the most significant trade flow in the global poultry market, representing 4% of global exports, according to USDA data. China imported 562,200 mt in 2024, down 17.6% from 2023, accounting for 11% of Brazilian exports that year.

China imports a range of chicken cuts from Brazil, with over 40% consisting of chicken wings and another 30% made up of chicken feet and paws, according to the Brazilian Association of Animal Protein.

This trade flow has undergone significant changes in recent years. From 2018 to 2021, Brazilian chicken imports to China grew at an average rate of 14.5%, driven by increased demand due to a pork supply shortage amid African Swine Fever. However, following the recovery from ASF, China’s domestic chicken production increased, leading to reduced pressure on imports from Brazil.

In 2023, China’s chicken production was heavily impacted by Highly Pathogenic Avian Influenza, coinciding with a dramatic reduction in imports from the US and Thailand. This situation enhanced Brazil’s importance as a supplier, resulting in a 26.4% increase in imports from Brazil. However, as China stabilized its production, Brazilian exports to China fell by 17.8% in 2024 compared to 2023.

Chicken: largest producers, importers, and exporters



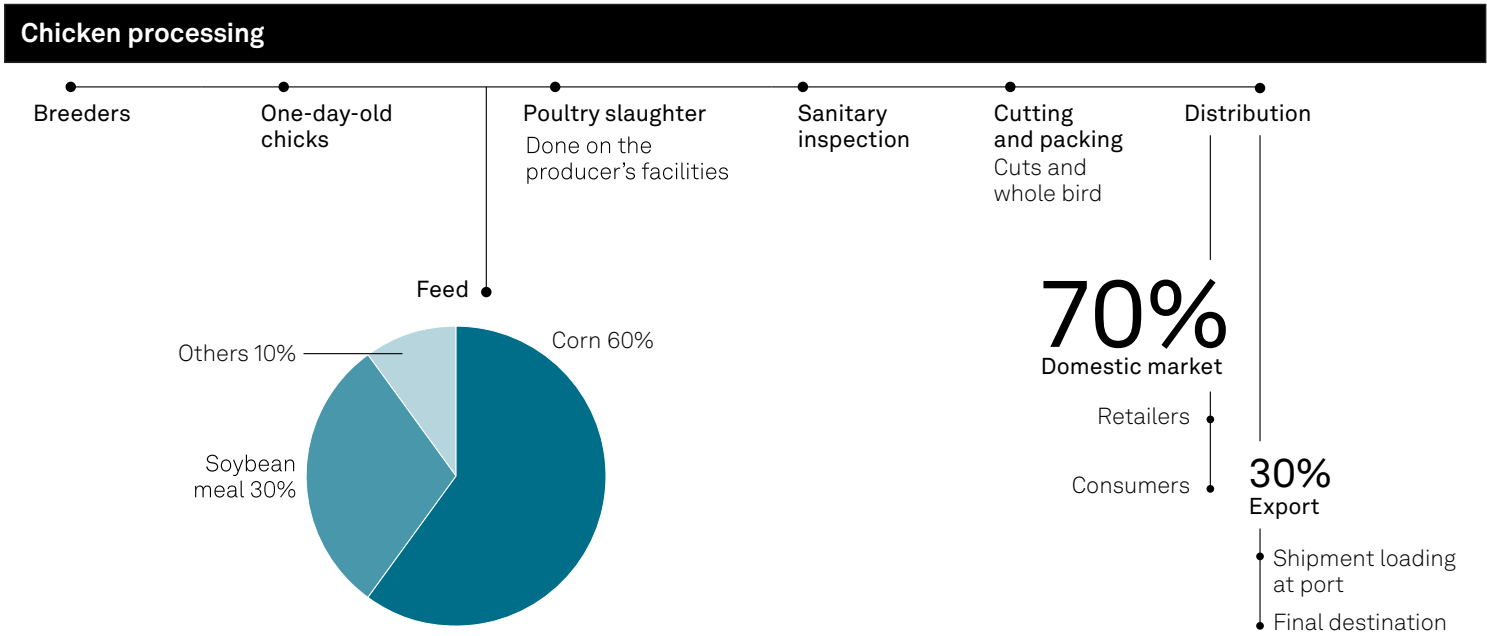
Source: USDA, S&P Global Commodity Insights

Processing section

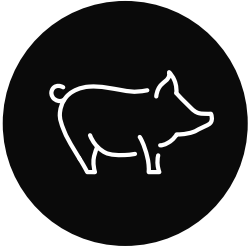
Breeders are maintained by chicken processors. Once eggs hatch, chicks receive vaccinations before being sent to integrated growers for 30-45 days of feed supplied by the processor. Once reaching the desired processing weight, the chickens are returned to the processing facility for slaughtering and inspection. The meat is processed into various cuts or sold as whole chickens. The meat is packaged at the processor’s facility and distributed to export or domestic markets.

Chicks receive vaccinations before being sent to integrated growers for

30-45 days



I Pork

Key properties: Pork					
	Consumption (per capita /kg per year)	Feed conversion ratio (kg feed/1 kg weight gain)	Age at harvest (months)	Most-commonly traded form	Typical feed consumption (%)
	56.2	2	6	• Bellies • Loins • Hams	Wheat24 Corn24 Soybean25 Others27

Key properties: global production and growing cycle

Pork is the world’s most produced, and second most traded meat. Asia accounts for more than half of global pork production, yet it remains the world’s largest importer, consuming over 60% of global supply. Europe is the second-largest pork-producing region but, unlike Asia, it is a net exporter. In contrast, regions such as the Middle East consume very little pork due to religious restrictions.

Producing pork at scale depends on several critical factors. Feed, which accounts for 60%-70% of production costs, must be both accessible and of high quality. Animal health is also essential—preventing diseases like African Swine Flu with strong veterinary care, vaccinations, and biosecurity safeguards productivity. While domestic demand drives industry growth, access to global markets enhances resilience. Diversified market access allows exporters to reduce waste and losses by commercializing all parts and cuts of the pork. In frozen form, the most heavily traded cut is the pork belly.

Vertical integration, as practiced in countries such as Spain, enhances efficiency and traceability across the entire supply chain—from the typical six-month growing cycle of pigs to the commercialization of fresh and frozen meat and byproducts.

In Spain, pigs are typically sent to abattoir at the age of six months, with corn, feed wheat, barley, and soybean meal each providing around a quarter of the feed. In China, more soybean meal and corn are used in place of wheat and barley.



Feed accounts

60-70%

of production costs.

Pork is a key source of animal protein across many regions, particularly in East Asia, parts of Europe, and the Americas. In China and South Korea, per capita consumption stands at **40.2 kg and 41.4 kg**, respectively. European countries, such as Spain and Poland, report some of the highest levels, at 56.2 kg and 53.6 kg per capita, according to the FAO. In the Americas, pork also plays an important dietary role, with the US consuming 29.6 kg per capita and Mexico 21.8 kg.

Per capita consumption stands at

40.2 kg

in China.

Key pork price drivers

1. Policy

China's push for greater sufficiency in producing its own pork has reduced its demand for imports and the total global trade flow. Animal welfare legislation can also affect the cost of production and prices.

February, 2022

Russia-Ukraine war begins, disrupting grain and fertilizer supplies and raising pig feed costs.

January, 2023

Germany and the Netherlands tightened animal welfare and environmental laws.

2. Tariffs and quotas

China's retaliatory import tariffs on the US, first introduced in early April, have disrupted the flow of offal. Less impact has been seen so far for US pork flows to Mexico, which is a major importer of fresh pork.

3. Disease outbreaks

The 2019 outbreak of African Swine Flu affected all agricultural markets, from corn to pork. Larger herds are very vulnerable to disease.

March, 2019

ASF spread fast, wiping out millions of pigs. China's pork supply shrinks, driving record imports from the US, the EU, and Brazil.

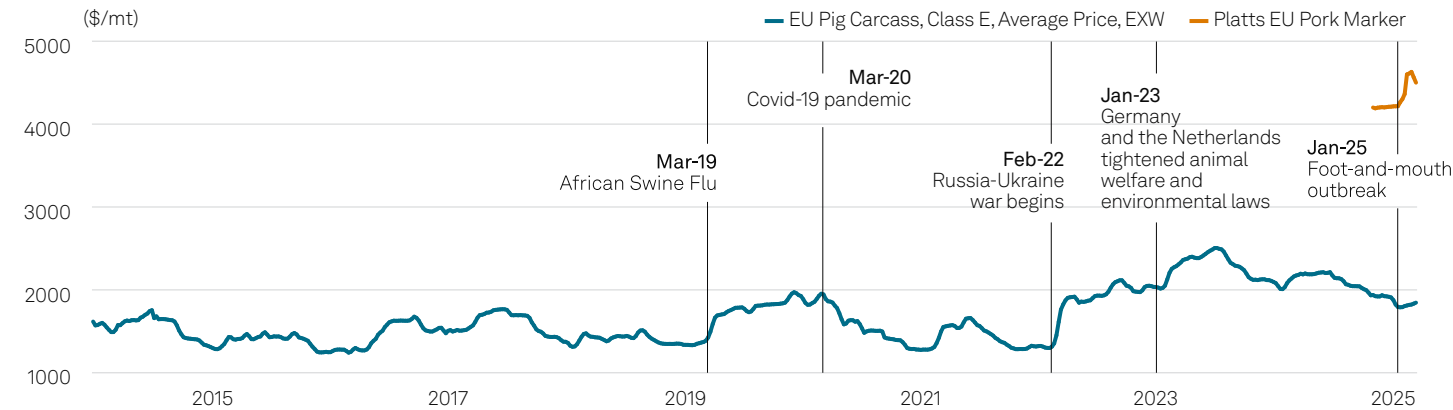
March, 2020

The COVID-19 pandemic disrupts supply chains, shuts down slaughterhouses due to worker shortages, and cuts restaurant demand.

January, 2025

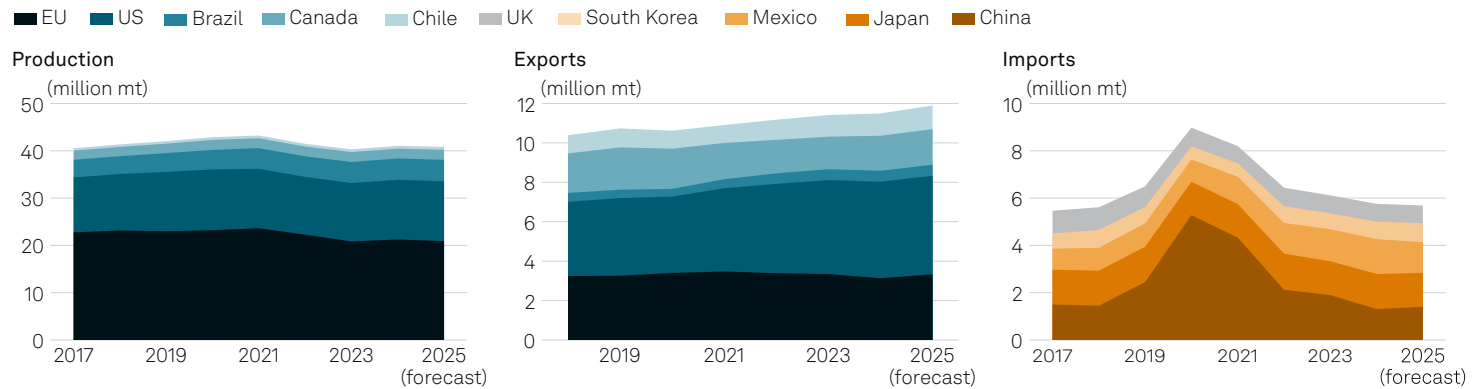
Foot-and-mouth outbreak hits Germany, the EU's first disease outbreak in 14 years. Germany exits non-EU markets.

Pork: Key price drivers



Source: S&P Global Commodity Insights

Pork: largest producers, exporters and importers



Trade flow

The most significant trade flow for pork is from Spain to Japan. Japan has maintained a consistent import volume, averaging 1.4 million mt from 2017 to the present. In 2023, Japan imported 164,000 mt of pork from Spain, which accounts for 32% of Japan's total pork imports, according to the Agriculture & Livestock Industries Corp.

The pork trade flow from 2017 to the present has been dynamic.

When China experienced an ASF outbreak in 2018, it resulted in significant pork supply shortages and price increases within the country, prompting higher import volumes. At its peak in 2020, China imported about 5.2 million mt of pork, accounting for 41% of the total pork exported in global trade. However, China's pork imports eventually subsided to about 1.3 million mt in 2024.

On the exporter side, following the peak of the ASF crisis, most major exporters except Brazil experienced a decline in export volumes. Brazil maintained steady growth and surpassed Canada to become the third-largest exporter in 2024, following the EU and the US. In 2024, Brazil exported about 1.53 million mt and gained a larger share of the Southeast Asian market from its competitive pricing.

Processing pork

The growth cycle of pigs from birth to market size takes about six months. During the first week of life, piglets are entirely dependent on their mother's milk, with colostrum intake being crucial for building their immunity during the first three weeks.

As they are weaned at three to four weeks, piglets transition from their mother's milk to solid feed, which requires careful management to ensure their health and minimize stress. After weaning, piglets enter the four- to 10-week growing phase, during which they grow rapidly, to reach 10-25 kg. During this stage, they are introduced to starter feeds that are high in protein and receive regular health checks to prevent disease.

Pigs in the finishing phase are provided a balanced diet to optimize their growth, reaching market weights of 100-120 kg. As they approach market readiness, pigs undergo quality grading before being transported to market facilities for further processing.

Seasonality also influences pig growth. Pigs tend to grow faster during the warmer months of spring and summer, as higher temperatures promote better feed intake and digestion. Conversely, pigs may experience slower growth during fall and winter. Lower temperatures can reduce feed intake, as pigs often expend more energy to maintain body temperature. Additionally, growth can be hindered further if housing conditions are not optimal or if health challenges arise from colder weather.

Seasonal fluctuations influence global pork demand due to cultural practices, festivals, and economic factors. In Asia, holidays such as Lunar New Year and Mid-Autumn Festival are associated with popular pork dishes, while in Europe, demand peaks during Christmas and other festive seasons. A country's economy also plays a key role in pork consumption, as pork tends to be more expensive than chicken.

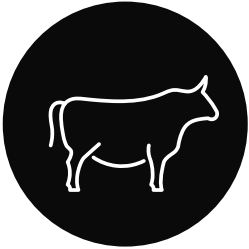
Disease, particularly ASF and FMD, remains the most disruptive factor in the pork supply chain. When a disease outbreak occurs, it disrupts production practices, leads to trade restrictions, increases production costs, raises mortality rates, and undermines market confidence, all of which negatively affects pork supply and demand.

China's pork imports eventually subsided
to about
1.3 million mt
in 2024.

Pork processing



I Beef

Key properties: Beef					
	Consumption (per capita /kg per year)	Feed conversion ratio (kg feed/1 kg weight gain)	Age at harvest (months)	Most-commonly traded form	Typical feed consumption (%)
	26.9	5-7	15-30	• 90CL lean beef trimmings • Frozen	• Grass • Lot feeding: - Grain (70%-80%) - Cottonseed - Silage - Molasses - Straw - Vegetable oil - Mineral/vitamin premix

Key properties: Global beef production

The global beef trade is shaped by a network of production surpluses, consumption trends, and trade dependencies. Key producers include the US, which accounts for **20% of global beef production; Brazil, 19%; and China, 13%, according to USDA data for 2024.**

Brazil's increased export capacity gives it a dominant role in global trade, supplying beef to markets that cannot meet domestic demand even amid strong production, such as the US and China. USDA data showed that Brazilian beef exports accounted for **28% of global trade, followed by Australia, 14%, and India, 12%.**

Among key consumers, the US, China, and the EU have strong domestic beef markets. However, some of the world's largest importers, notably China, Japan, South Korea, the US (despite being a top producer), and countries in the Middle East, rely heavily on imports to meet the growing preferences of consumers, changing dietary habits, and the limitations of domestic production. This dependency underpins the necessity for a robust, responsive, and globally interconnected beef trade network.

In 2024, the average beef consumption in Australia is projected at 26.9 kg per capita. Domestic utilization accounts for 30% of total beef production, with the remainder directed to exports. Australian cattle are primarily grass-fed, then grain-finished in feedlots, where their stay ranges from 30 to 600 days, depending on their market destination. Cattle destined for the domestic market typically spend up to 100 days in feedlots, while those for export generally remain longer. The feed composition comprises **70%-80% grain**, supplemented with cottonseed, silage, molasses, straw, vegetable oil, and mineral/vitamin premix. Among the most traded products is the 90CL lean beef trimmings, primarily exported to the US for hamburger production.



Brazilian beef exports accounted for

28%

of global trade followed by Australia (14%), and India (12%).

Global beef price drivers

Several interlinked variables drive global beef prices. Among the primary price influencers are feed costs, global supply and demand balances, climate patterns, trade access, currency fluctuations, and geopolitical stability.

Feed—especially corn and soybean meal—represents one of the most significant cost components in beef production. Therefore, rising feed prices often translate into higher beef prices. **In Brazil, about 70% of beef cattle production comes from animals finished on grass**, but climate risks, pasture conditions and phytosanitary diseases tend to be greater in Brazilian beef production. This factor brings greater competitiveness in beef prices compared with other suppliers, attracting many buyers due to greater affordability.

Tariffs, quotas, and sanitary trade barriers have increasingly come to the forefront as influential price levers. Countries aiming to protect domestic producers or control market exposure often impose tariff rate quotas, set minimum price thresholds, or enact technical barriers to trade. For instance, China has frequently adjusted its import licensing, while the EU maintains strict sanitary and quality standards under its Common Agricultural Policy. **The US limits imports of Brazilian beef to 65,000 mt/year.**

In Brazil, about

70%

of beef cattle production comes from

animals finished on grass

In recent years, protectionist policies and non-tariff barriers have tightened global supply routes, making certain markets more volatile. These restrictions not only distort price parity among suppliers but also prompt sudden shifts in trade flow. For example, when Indonesia reduced quotas for Indian buffalo meat in favor of diversified suppliers, it opened short-term windows for Brazil and Australia to expand their reach. Similarly, the US-China trade dispute disrupted bilateral beef flows, causing ripple effects across the global supply chain.

Brazilian Beef

1. Policy

Global trade policies include a broad set of tools and agreements, such as trade agreements (e.g., USMCA, Mercosur, the EU Free Trade Agreements). These agreements often reduce or eliminate tariffs/quotas, boosting beef trade between member countries amid lower barriers and those countries with favorable agreements can expand their beef exports significantly. For example, Australia has trade agreements with Japan and South Korea, giving its beef producers a competitive edge in those markets over the US exporters that face higher tariffs.

Trade policies create artificial price differences across markets. A country with high tariffs might have significantly higher beef prices than another producer with free trade.

Countries that are heavily reliant on beef exports (e.g. Brazil, Argentina, Australia) are vulnerable to policy changes in major markets. A tariff hike or ban from a key importer (like China or the US) can crash domestic cattle prices due to reduced demand.

May 21, 2024

The Chinese government authorized 24 new Brazilian beef processing plants to export their products. With this increase in supply, along with a record-high volume of beef production,

Beef: Key price drivers



importers in China have begun to put pressure on Brazilian beef prices, sending the Platts Brazil beef price assessment to its lowest level on record.

Nov. 22, 2024

Increased demand from domestic and export markets strengthened Brazil's cattle prices, triggering higher export beef prices. Increased concerns over the fiscal health and Brazilian public debt boosted the exchange rate. A favorable forex rate between the Brazilian real and the US dollar has further supported exports.

March 14, 2025

Despite the suspension, increased overseas competitiveness toward Brazil-origin beef drove up export prices, mainly due to warmer demand from the US and China. This reflects increased concerns and an unclear global trade scenario amid tariff issues and the trade war between the US and China.

2. Tariffs and quotas

Tariffs and import quotas can have a significant impact on global beef trade and prices. A tax imposed on imported beef means foreign producers must pay extra to sell in the importing country, which could reduce imports amid higher costs and make the imported beef less competitive.

The impact on beef prices should be reflected in domestic price increases. With fewer imports, domestic supply is tighter, which can drive up prices for consumers. Meanwhile, **domestic producers often benefit from less competition and higher prices.**

Countries' restrictions on import volumes can create artificial shortages and inefficiencies in the allocation of global supply once importers profit from buying at lower world prices and selling at higher domestic prices. Prices may spike if demand exceeds the quota-limited supply, and the market may also favor certain countries through preferential trade agreements, giving them an edge.

Dec. 19, 2024

Lukewarm demand softened trading activity, as suggested by seasonality. The Chinese and the US markets diminished buying interest. Inventories were well-supplied in China for the Lunar New Year, and the US awaited its fresh quota of 65,000 mt.

3. Animal health issues

Animal health issues like mad cow disease or bovine spongiform encephalopathy, and FMD can lead to trade restrictions or bans. Importing countries immediately suspend beef imports from

affected countries and these bans can last from weeks to years, depending on the severity and response. In 2021, Brazil had a confirmed case of BSE. China, its larger beef customer, suspended imports for more than two months, causing beef to pile up in Brazil and prices in China to rise.

Countries may impose extra inspections, certifications, or delays, which act like non-tariff barriers, slowing trade even if a formal ban is not in place. Exporters redirect beef to alternative markets, often at lower prices. Importers scramble to find new suppliers, often at higher prices. If Australia faces drought and disease limits its beef exports, Japan might buy more from the US or Argentina, shifting trade flows globally.

Cattle health and biosecurity continue to exert substantial influence on beef export pricing and availability. Outbreaks of diseases such as FMD, BSE, and Lumpy Skin Disease have previously triggered immediate and lasting restrictions on exports from affected regions.

In Brazil, sporadic BSE cases have historically led to temporary suspensions by China, its top customer. These disruptions not only hurt prices in Brazil due to oversupply but also elevate international prices as Chinese buyers scramble to replace lost volume, often turning to the US or Australia. Similarly, Australia's beef export performance has been intermittently impacted by droughts and biosecurity concerns, leading to supply squeezes and price hikes in East Asian markets.

In import markets, increasing concerns over traceability and animal welfare are leading to more stringent inspection regimes, sometimes creating friction for exporters who cannot meet these heightened standards. This has been evident in the EU's tighter controls over South American beef imports and ongoing debates around hormone usage in beef from North America.

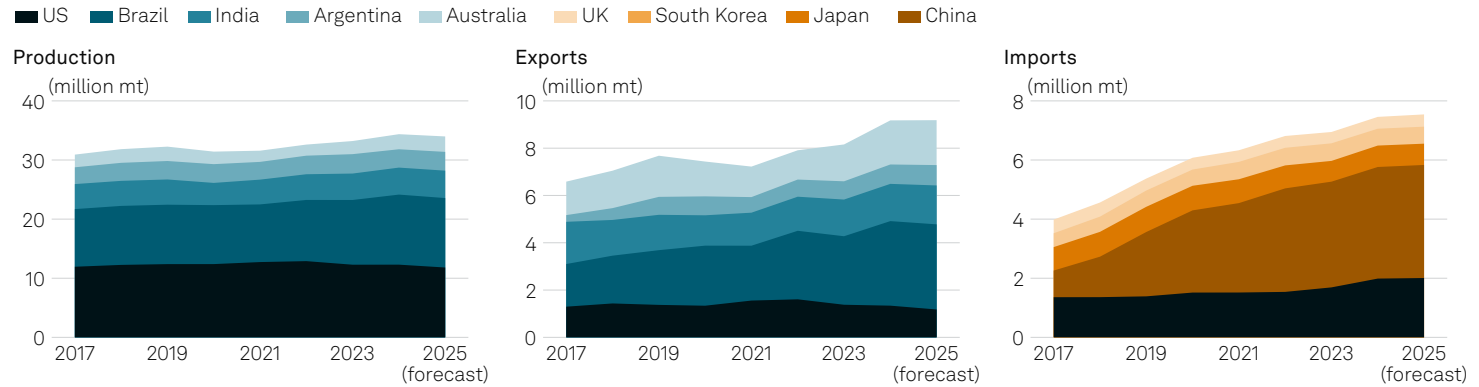
March 14, 2025

The Chinese government suspended three Brazilian beef plants due to non-compliance issues after remote audits identified excessive cattle tick pesticide residue. Concerns surge over China's further suspension of new Brazilian beef plants.

Trade flow

The most substantial trade flow in the global beef market is from Brazil to China. According to Brazil's Foreign Trade Agency, **Brazil exported 1.32 million mt of beef to China in 2024**, making it the largest bilateral trade route for beef globally. Given that **Brazil's fresh, chilled, and frozen beef exports in 2024 were 2.54 million mt, exports to China represented about 52% of exports.** While exact global trade volumes vary, this flow constitutes a significant portion of the international beef trade.

Beef: largest producers, exporters and importers



Source: USDA, S&P Global Commodity Insights

Over the past decade, Brazil has consistently held the position of the world's largest beef exporter, but its export volume has seen significant growth, rising 27% in 2024 compared with 2023. China has emerged as the dominant importer, with its beef imports from Brazil increasing correspondingly, due to two key factors:

- **China's growing demand: Rising incomes and urbanization in China have led to increased beef consumption.**
- **Brazil's production capacity: Brazil's vast cattle herd and competitive production costs have enabled it to meet growing international demand.**

Processing beef

A calf remains with its mother until its eighth month, when it reaches about 195 kg. The weaning process begins in the ninth

month. By the 18th month, the calf turns into a steer at about 300 kg. When the steer reaches 375 kg, it is considered ready to be finished by grass or grain feed. In Brazil, the finishing period is usually made up of 85% grass-fed and 15% grain-fed.

When cattle are ready to be harvested, they are considered finished steers, with an idela weight of 540 kg or more. The ideal processing period is about seven to 10 days after it is bought by a beef packer, but it depends on the plant's harvest schedule.

Once the animal is harvested and dressed, the carcass should spend one day in the cold storage/chamber for inspection and sanitary maturation. The period from beef packing and distribution to the final destination depends on the location of the beef plant.

The chart shows the process from the finishing period to the final consumer.



Conclusion

Rising disposable incomes in East Asia have driven the surge in meat consumption over the last two decades. This has amplified demand for feed grains because the feed conversion ratio for pigs, cattle and chicken is greater than one.

Some developed economies, such as the UK, have seen meat consumption decline as higher costs pushed people to opt for lower-cost alternatives, but growing prosperity across larger populations in Asia has still lifted aggregate global demand. The UN estimates that global consumption of beef, poultry and pork averaged 44 kg per person in 2024.

The supply outlook is less clear, given diseases capable of eliminating herds and flocks from entire regions as Brazil's poultry exporters experienced briefly in July 2024.



CONTACTS

Americas: +1 800 597 1344

Asia Pacific: +60 4 296 1125

Europe, Middle East, Africa: +44 (0) 203 367 0681

spglobal.com/commodityinsights

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