



# Asia Soy Foods Report

2025

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# Introduction

Welcome to the U.S. Soybean Export Council's 2025 Asia Soy Foods Report, a comprehensive report covering current market factors influencing the soy foods industry in key countries across Asia. This in-depth exploration of soybean production and demand, soy foods consumption and trends, sustainability, policy and labeling provides a holistic understanding of each market.

In Asia and the rest of the world, consumer demand for plant-based proteins is increasing. This trend impacts traditional soy foods and influences the inclusion of soy as an ingredient in many new foods, including meat alternatives.

U.S. Soy is well positioned to meet the growing demand of Asian consumers and food producers seeking sustainable, reliable solutions to their soy foods needs.

The 2025 Asia Soy Foods Report was produced by U.S. Soybean Export Council staff and leading market experts to provide current, relevant market context and analysis required by U.S. Soy exporters and importers, food manufacturers, supply chain members and other stakeholders across Asia's soy foods industry. I'm confident you will find it to be an informative and insightful tool in understanding this valuable market.



A handwritten signature in black ink, appearing to read 'J. Sutter', written in a cursive style.

## Jim Sutter

Chief Executive Officer  
U.S. Soybean Export Council



# China

## SOY FOODS REPORT



# Soybean Production and Food Soybean Demand

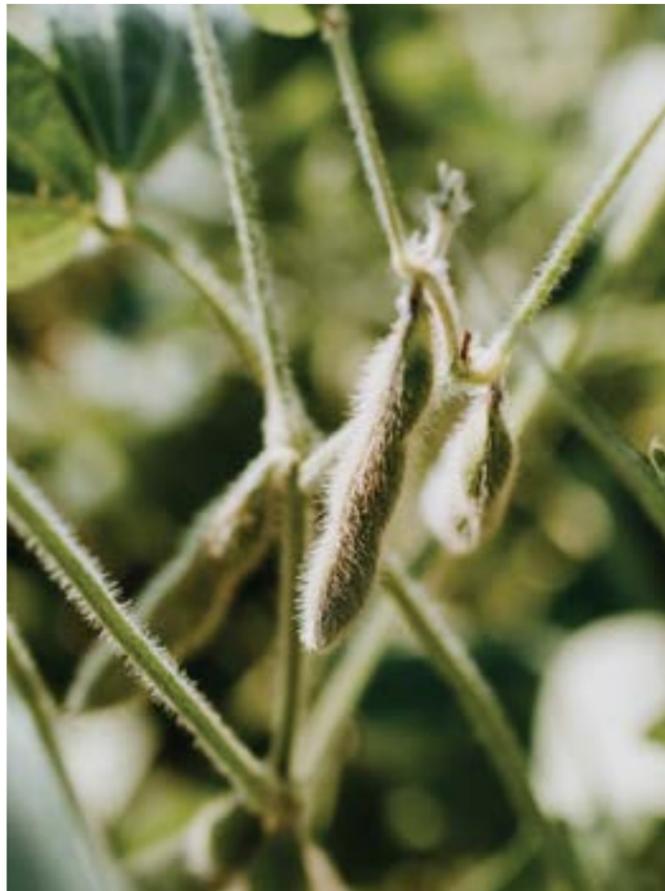
## CHINA'S SOYBEAN PRODUCTION HISTORY

China has a history of planting soybean for more than 5,000 years. Written records of soybean production go back more than 2,000 years. The ancient book Zhou Li records the social politics, economy, culture and protocol of rites of the Pre-Qin Period, before 221 B.C. It contains the saying of “five grains,” which includes soybeans. The earliest collection of poems from China’s history, The Book of Songs, contains writings from between the West Zhou Dynasty and the Spring and Autumn Annals, which is roughly 11 to 6 centuries B.C. It says, “There are beans in the central plains, which the common people gather.”

In the centuries from the Pre-Qin Period to 1996, China was self-supporting in soybean production or a net exporter. But after that year, China became a net importer, and over time bought more and more soybeans. In 2004, the country experienced an incident called the Soybean Crisis. In 2018, when China and the United States had trade conflicts, soybeans were in the eye of storm. During the three years of the COVID-19 pandemic, soybean prices in China experienced big rises and falls.

Now, China is the world’s second largest economy, the largest non-GMO soybean producer, and the largest importer of GMO soybeans. The country is publicizing various policies under its Soybean Revitalization Plan, and at the same time, China is developing and planting GMO soybeans with domestic intellectual property.

To the average person, the soybean may seem simple, with its oval kernel. However, to an industry insider, the wrinkles on the seed coat may seem to contain many marks of powerful currents and changes of time.



## PRODUCTION OF SOYBEANS

Supply and demand balance sheets serve as an important basis on which supply, demand and stocks can be analyzed and prices can be predicted by statistic departments, customers, traders and other industry stakeholders.

The China National Grain and Oils Information Center, or CNGOIC, publishes a version well-recognized by the soybean community. For example, in its Feb 6, 2023, report the sheet said China’s total soybean production for crop year 2022/23 was 20.285 million metric tons (745 million bushels), and that of crop year 2021/22 was 16.395 million MT (602 million bushels). Corresponding to this figure, another official Chinese publication said that total soybean total in 2021 was 32.8 billion jin, or 16.4 million MT, which is consistent with the CNGOIC figure. Though USDA reports on soybean export volumes to China differ from CNGOIC reports on soybean imports by China, and though soybean industry participants may make their own estimations about China’s soybean production, this analysis will use the CNGOIC data as the basis for discussion.

### HEILONGJIANG (NORTHEAST CHINA)

Throughout China, only six or seven provinces do not plant soybeans, while the other provinces plant different varieties and harvest at different times of the year. Considering that it is a big country with significant production, this overview will take just a brief look at areas of major influence, like viewing flowers on horseback.

Heilongjiang Province and Inner Mongolia Autonomous Region top the list for soybean production. For instance, Heilongjiang Province planted 49.5% of the country’s total soybean acreage. Heilongjiang Province has been the country’s largest agricultural province, producing large volume of grains, thanks to two reasons. One is that it has a large area of black soil. The other is the popularity of mechanized cultivation. Altogether, the world contains three major areas of black soil, and China’s is in Heilongjiang Province.

Heilongjiang Province is China’s border province to the most northeast. Historically, it had a very thin native population and provincial agriculture. Between 1947 and 1976, China mobilized almost 1 million people to immigrate to that province to station troops there for both guarding and cultivating. During those three decades, the last, 1966 to 1976, was the most intensive as Heilongjiang Production and Construction Corps of The Army was established. That led to the building of more than 100 large farms and ranches. This historical origin of Heilongjiang Province has made it far more advanced in mechanized cultivating than other in-land provinces.



Under this context, soybean growers in Heilongjiang Province fall into state-owned farms, growers on rent and self-owned land growers. Thus, land rent plays a major role in soybean production cost. In 2022, the full cost for planting 1 hectare (nearly 2.5 acres) of soybeans was around CNY 15,750, or \$2,360. Of that, land rent was CNY 12,000, or \$1,800, more than three-fourths of the total cost. When discussing planting intentions or selling pressures, land rent can never get too much attention as the critical factor.

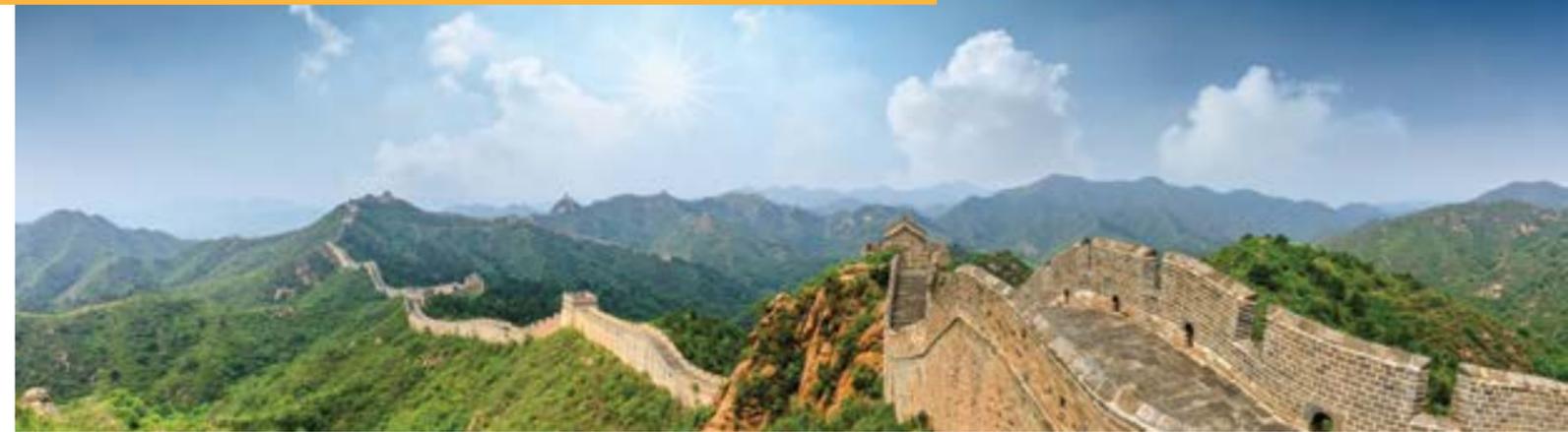
Another important factor in soybean production costs is subsidies. Year after year, Heilongjiang Provincial Department of Finance makes standards for grower subsidies to adjust or incentivize planting of soybean or other crops.

For example, in 2023, the full cost of planting 1 hectare (nearly 2.5 acres) of soybeans, including land rent, was about CNY 17,500, or \$2,460, and the standard for grower subsidies was CNY 5,490, or \$772, per hectare. Because soybeans yield less than corn, in recent years the Department has been giving higher subsidies to soybean growers than to corn growers. Besides grower subsidies, farmers can apply for other subsidies, like rotation subsidies and corn-soybean belt complex planting subsidies, which are usually lower than grower subsidies and have less influence on planting intentions.

One other critical condition to growing soybeans is cumulative temperature. From Ha'erbin City in the south to the Greater Khingan Mountains in the far north, Heilongjiang Province has six cumulative temperature belts. After years of research and breeding, each belt has developed its own advantageous soybean varieties.

In addition to the south-to-north distribution of cumulative temperature belts, the province also plants more soybeans in the west than the east. Because paddy fields cover much area in the eastern part of the province, it has become a major rice production area. Moreover, in normal years, soybeans planted in eastern part contain lower protein levels than the western part. The west part of Heilongjiang Province, represented by the three municipal areas of Qiqiha'er, Suihua and Heihe, is the heart of soybean planting, originating and trading for the province.

Inner Mongolia Autonomous Region neighbors Heilongjiang Province, so it is included in this region. In fact, Jagdaqi, the capital city of the Greater Khingan Mountains Area of Heilongjiang Province, the municipal-level area containing China's largest forest, is located geographically on the land of Inner Mongolia. Inner Mongolia's soybean planting belt is mainly in the east, near the western part of Heilongjiang Province. That area is represented by Arong Banner, Morin Dawa Daur Autonomous Banner and Oroqen Banner. Banners are county-level administrative areas. Upon harvest each fall, high-quality soybeans from these Banners are trucked less than 200 kilometers (124 miles) to Nehe and Nenjiang counties in Heilongjiang Province.



Some are stored in the outdoor piles of private elevators and some in the wide, flat warehouses or tall 1,000-MT silos of state-owned trading companies.

When considering why soybeans from Inner Mongolia are sold to Heilongjiang Province, an obvious fact is that most of the country's domestic soybean futures (DCE SoyONE) delivery warehouses are located in Heilongjiang Province. For industry observers, it's hard to tell whether that is the reason or the consequence.

Northeastern soybeans from Heilongjiang Province and the Inner Mongolia Autonomous Region are shipped to in-land provinces of the country mainly by truck and rail. In the domestic market, they are usually traded at screened specifications or spiral-tower selected specifications. The major difference between the two standards is that the perfect kernel rate for spiral-tower selected quality is a minimum 95%, but for screened quality it is a minimum 85%. Spiral-tower selected quality also has much less foreign matter than screened quality.

### OTHER AREAS

Besides Heilongjiang Province and Inner Mongolia Autonomous Region, major soybean growing areas include Anhui Province, Henan Province and Sichuan Province. These three provinces contribute about 16% of the country's total soybean production. Henan Province is located on the North China Plain and enjoys popular mechanized cultivation. Anhui Province is in the hilly terrain in East China, and Sichuan Province is in southwest China's mountainous area. Neither province is fit for machines.

Below that level of production, Hubei Province, Jiangsu Province and Shandong Province have some soybean acreage and production, amounting to 8 to 9% of the country's total production. However, even if these provinces have quality premiums in soybean varieties, their volume is far from making any significant impact on the whole nation's soybean market.

For all the provinces listed above, compared to Heilongjiang Province and Inner Mongolia Autonomous Region, they have some or all the following characteristics.

- Cultivated land is less leveled.
- Mechanized cultivation is not popular.
- Growers are small.
- The soybean seed industry is not developed.
- Soybean varieties are not fit for spiral-tower selection.

In addition, Heilongjiang Province and Inner Mongolia Autonomous Region are in the north of country and have much lower temperatures throughout the year, which makes preserving soybeans much easier. Northeastern soybeans also outperform other areas in serving a certain regional market in the country with a steady supply all year.

Even so, special varieties like Cuishan in Jiangsu Province, or Zhonghuang in Hubei province can trade at a premium as high as CNY 1,000 or \$140 per MT over northeastern soybeans. These soybeans do have regional and periodic influence on the national market.

## NATIONAL SUPPLY AND DEMAND

Coming back to the supply and demand sheet, CNGOIC lists production of domestic soybeans, volume of imported soybeans, volume of exports and various consumption volumes. Among these figures, the import volume is close to 100 million MT per year, mostly GMO soybeans from Brazil, the United States, Argentina and Uruguay, as well as a small volume of non-GMO soybeans mainly imported from Russia, Ukraine, Benin and Ethiopia.

Thanks to the change of HS codes, the import volume of non-GMO soybean is now separated from the volume of GMO soybeans, according to China's customs administration. However, this separation is not shown on CNGOIC sheet yet. For example in calendar year 2023, China imported 97.71 million MT of GMO soybeans, including 69.95 million MT from Brazil, 24.17 million MT from the United States, 1.99 million MT from Argentina and 1.41 million MT from Canada. In the same year, China imported 1.70 million MT of non-GMO soybeans, mainly from Russia, which supplied 1.29 million MT.

In the consumption figures, all volumes used by seeding, foods use, industrial use and crushing are listed. Crush consumption could be considered feed use, because only a minimal portion of soybean meal is for foods use, which comes from domestic soybeans.

Industrial consumption includes soy protein plants. This industry has about 10 factories and almost all of them are located in Shandong Province. They use about 2.7 million MT of soybeans each year and produce about 900 thousand MT of soy protein. As about half of the finished soy protein is exported, this industry adopts very high requirements for non-GMO purity. Most factories take 20 to 30 samplings from each truck when receiving raw material, which are subsequently mixed and tested for quality parameters and non-GMO purity. Some northeastern soybeans or Russian soybeans were suspected of GMO contamination because of high content of glyphosate residue. However, there are no GMO varieties in northeastern soybeans or in Russian soybeans that can be circulated into China's market.



Major players in crush consumption are large-scale oil plants, which are usually built near seaports. They extract soybean oil from imported GMO soybeans by chemical means. Some oil plants process non-GMO soybeans only and produce soybean meal for foods use, like soy protein or soy sauce production. Besides these, small workshops in Heilongjiang Province, called primitive crushers, crush local soybeans by physical means and produce strong-aroma soybean oil. This oil has a high content of admixtures due to absence of refining, and thus is consumed mainly within the province.

### INCENTIVE POLICIES

The Chinese Ministry of Agriculture and Rural Affairs started the *Soybean Revitalization Plan* in 2019, targeted at improving the country's soybean planting level in terms of acreage, yield, quality and sustainability.

The *Plan* develops incentives year by year, playing the role of guide by means of policy making. It also sets standards for various subsidies, including grower subsidies, the rotation subsidies and corn-soybean belt complex planting subsidies, as mentioned previously.

Besides these, China also runs a national reserve program and provincial reserve programs, working through SinoGrain for the former and provincial agents for the latter. These programs buy at harvest and sell at shortages between harvests, so as to stabilize market price.

There are no public figures about volume or stock of the national reserve program, but the purchase volume and buying price of the national reserve program clearly serves as the weathervane for other players in the market. For instance, spring 2023 witnessed weak demand, gloomy sentiment and lower protein content than the previous year. Growers and traders lost money at low selling prices. Then, SinoGrain opened up many warehouses for soybean purchases, which eventually stabilized prices and protected the interests of soybean growers.

Taking a glimpse at the supply and demand sheet figures of recent years, China harvested two bumper crops of soybean in the fall of 2022 and 2023. Significant improvements were made in soybean acreage, yield and total production. Unfortunately, there were big losses in 2021 for weather reasons.

### TRENDS IN DOMESTIC GROWING

Growing soybeans domestically follows two obvious trends.

One trend is that policy is playing a more and more important role in planting intentions. Since 2022, the consumption of soybeans has declined, both in foods use like tofu and in industrial consumption like soy protein. On one hand, as land rent is increasing year by year, farmer profitability is relying more and more on the grower subsidy. On the other hand, limited by the weak market demand, the eventual realization of profit is relying more and more on the national and provincial reserve programs.

The second trend is that growing non-GMO soybean and GMO soybean needs to be differentiated. China has been running pilot areas for GMO soybean commercial planting since 2021. Before then, the entire country was planting non-GMO soybeans. Through the end of 2023, China allowed planting GMO corn and GMO soybeans in 20 counties of five provinces, Hebei, Inner Mongolia, Jilin, Sichuan and Yunnan, as industrialization pilot areas.

As GMO soybean planting spreads, it has become a serious challenge to segregate GMO soybeans from non-GMO soybeans, and to protect the soy protein industry, which has strict requirements of non-GMO purity. The purpose of planting China's own GMO soybeans simply to improve yield, while and improving protein or oil content at the same time.

Within China, the resulting issues deserve deep thoughts. The industry needs to avoid contaminating traditional non-GMO soybean planting areas with high-protein GMO soybeans. At the same time, the industry is contemplating how to replace imported soybeans with high-oil GMO soybeans, and to what extent can the replacement happen.

## CHANGING GMO AND NON-GMO REGULATIONS

Inspection of imported non-GMO soybeans in China has been very strict. Customs has adopted a zero-tolerance principle in GMO testing, which is not friendly to the quantitative non-GMO soybean principle that has been widely recognized by the international community. That causes concerns for detected GMO contamination, when return or even destruction of cargo is mandated.

Before China planted GMO soybeans with its own intellectual property, imported GMO soybeans had been put under very strict supervision. Per China's Regulations on Administration of Agricultural Genetically Modified Organisms Safety, importers of GMO soybeans had to specify the terminal processing plant for the soybeans, provide a series of measurements and a system involving safety and management, and apply for a GMO import permit together with seller/exporter from the Chinese Ministry of Agriculture and Rural Affairs. After the permits and license are ready and customs clearance is complete for the cargo, the imported soybeans must be delivered to the terminal processing plant in accordance with strict logistics controls.

After all these formalities, the control measurement continues. The terminal processing plant has to follow relevant management systems in terms of processing products from imported soybeans, disposing of the leftovers, labeling the finished products and so on. Theoretically, it can be concluded that the circulation of imported soybeans has been restricted within a comparatively strict and safe range.

As planting of China's GMO soybeans spreads through the country, it has become a new challenge to tell GMO agricultural products or finished products from non-GMO agricultural products by means of labeling. On October 18, 2023, the Chinese Ministry of Agriculture and Rural Affairs openly sought advice on revising Managing Methods for Labeling Agricultural Genetically Modified Organisms.

The most significant change was that for corn, soybean and canola grains or products, GMOs should be labeled when GMO content in any single crop is over 3%. The period for openly seeking advice ended November 17, 2023.

Revisions to the Methods may follow. Should that happen, there would be no need to mark GMO on product labels if GMO content is less than 3% for any single crop. If the revised Methods come into force, it would shake the zero-tolerance principle in testing GMOs. And then, it will be worth close attention to see China's customs administration will make corresponding adjustments in testing the purity of imported non-GMO soybeans.

## SOYBEAN CONSUMPTION

According to the latest supply and demand sheet, China consumed 117 million MT tons of soybeans in 2023/24, including 95 million MT of imported GMO soybeans, 1.5 million MT of imported non-GMO soybeans and a domestic crop of 20.84 million MT. Customs statistics report that 1.7 million MT of non-GMO soybeans were imported during calendar year 2023, so 1.5 million MT estimates imports for crop year 2023/24.

Theoretically all 95 million MT of imported GMO soybean is for feed use. That means the soybeans are crushed for soybean oil, and soybean meal is a byproduct for feedstuff use. The soybeans can also be used to produce full-fat soybeans, which are also raw materials for feed use. Or, the soybeans can be directly used in feedstuff production. But actually, a certain volume of imported GMO soybeans was sold into the foods sector, which is discussed in detail in another section.

The 20.84 million MT of domestic crop is regarded as 100% non-GMO, plus the 1.5 million tons of imported non-GMO soybean, bringing the annual total consumption of non-GMO soybean to 22.34 million MT. However, carry-in and carry-out is different from year to year, and the National Reserve Program and Local Reserve Programs will buy or sell in terms of auction to tune the market.



Among all subdivisions of non-GMO soybean consumption, crush consumption makes up about 8% of total volume, foods use accounts for 53% and soy protein, which is shown as industrial consumption on the supply and demand sheet, occupies 13%. Other uses include seed use, export, residue, etc.

## CRUSH

In theory, China has a total crush capacity of 1.8 million MT per year for non-GMO soybeans, which fall into three major categories.

The first category is big crushing plants like Wilmar, CJS and Shandong Yuwang Group. They produce non-GMO soybean oil and byproducts like soy-sauce meal or low-temperature meal. Typically low-temperature soybean meal is for foods use and high-temperature meal is used for feed. This group represents a total crushing capacity of 1.1 million MT per year, among which 700,000 to 800,000 MT is soy-sauce meal.

These big crushers usually have their own retail brands for soybean oil, enabling them to gain considerable premiums in the sale of soybean oil.

On top of that, non-GMO soybean oil can collect some tax compared to soybean oil produced from GMO soybeans, and this makes additional profit for the crushers.

Soy-sauce meal used to be the major raw material for soy sauce producers. However, as consumers get more and more particular in recent years, most producers will tell the story that they directly brew soy sauce with soybeans. This method is usually of higher quality and more delicious compared to producing from soy-sauce meal. These producers are reluctant to admit that they produce soy sauce from meal. So, in recent years the demand for soy-sauce meal has been shrinking.

The second large category is pressed soybean cake producers. They are mainly located in Dalian and Qingdao, close to the major soybean growing area in northeast China. The location also makes it convenient to load their products onto maritime vessels. Almost all pressed soybean cake is meant for export to feed ruminants. Very little goes to domestic consumption. This category represents consumption of 200,000 MT of soybeans per year.

The third category is primitive oil mills, which are usually small and located in northeast China. They don't have the equipment or technical condition to produce soybean meal for foods use, so their main product is crude pressed non-GMO soybean oil, which can only be distributed in a small area. Their byproduct is soybean meal for feed use.

When soybeans are cheap enough, these oil mills have a wonderful crush margin. For example, in fall 2022 northeast China harvested a large crop with universal deficiency in protein. However, in normal years these mills have to use leftover soybeans from spiral-tower selections, which mainly include damaged soybean and splits, as a cheap alternative so that they can make ends meet.

This category of producers can consume 400,000 to 500,000 MT of soybeans per year in theory, but few of them can operate through the year. In fact, most of them can only operate in the months of harvest, given that crush is profitable. Among these oil mills, generally facilities are aged due to frequently standing idle, and the effective crushing capacity is far less than the theory.

## SOY PROTEIN

Soy protein is a major type of plant-based protein that is gaining share in human diet structures due to its richness in multiple amino acids, low fat and freedom from cholesterol. Soy protein is widely used in meat products, plant-based meat, snack foods and vegetable protein drinks. China consumes about half of the world's soy protein.

China's soy protein industry started in the 1980s, and until 1990 China was a net importer of soy protein due to its limited technology. Especially in regard to soybean protein isolates, China was completely dependent on imports. From 1997 to 1999, China built many plants to produce soy protein isolates. In 2000, China became self-sustained on soy protein isolate production and started to export to other countries.

Now, after more than two decades of development, China has formed a very intensified soy protein industry. Less than ten major plants in the country possess more than 90% of the industry's capacity. These soy protein plants are located mostly in Shandong Province and Heilongjiang Province, especially centralized in Shandong Province. The whole industry has a theoretical processing capacity of 3 million MT of soybeans per year, producing about 1 million MT of soy protein isolate, soy protein concentrate and textured soy protein in total. Half of these finished products get exported to the U.S., the European Union, South America and Southeast Asia.

In cases where the soy protein products are meant for export, the bar would be lifted for non-GMO purity. If the products are meant for domestic use, certain flexibility could be given.

In terms of raw material procurement, some soy protein plants will stay with domestic soybeans only, mainly from northeast China, or Shandong Province and Henan Province. Soybeans from northeast China deliver large volumes and stable supply, while soybeans from Shandong Province and Henan Province can only be supplied in the period around harvest. Some other soy protein plants will purchase imported non-GMO soybeans from countries like Russia and Ethiopia.

However, rarely does a soy protein plant buy quantitative non-GMO soybeans from origins like the United States, Canada and Ukraine.



## SOY FOODS: FERMENTED AND UNFERMENTED

Soy foods are the largest use for non-GMO soybeans in China. They consume more than half of the country's non-GMO soybeans, creating rich and diverse products.

Soybeans play an important role in Chinese diets. Green soybeans pod-boiled in salted water are served in random barbecue stalls at night markets in the summer. Tofu is common in almost all provinces. Stewed bean milk skin on sticks is available from cooked food stalls in the country's southwest Chengdu city. And "Lao Ganma" hot and flavored fermented soybeans can be found in many foreign supermarkets.

Soy foods fall into two general categories: fermented and unfermented. Fermented soybean foods include common products like fermented bean curd, fermented soybean, natto, soybean paste and more. The non-mainstream fermented soy foods include hairy tofu, or fermented tofu with a layer of moldy hair on the top and stinky dried bean curd, which is usually very local and not appreciated nationwide.

Unfermented soy foods include tofu, soy milk, rolls of dried bean-milk cream, dried bean curd, thin sheets of dried bean curd, jellied bean curd and condensed bean curd jelly.

As there are many kinds of soy food products and people in different areas have their own preferences and expertise due to taste and dietary habits, hardly any universal production processes exist in the industry.

For instance, many kinds of tofu are available on the market, like southern tofu made out of gypsum, northern tofu made out of bittern, and silken tofu made out of gluconic acid lactone with less calcium ion and higher water content. When examining reasons Lao Ganma hot and flavored fermented soybeans attract so many loyal consumers at home and abroad, it is easy to preserve, and its hot flavor is preferred by young people. The product has made an extraordinary effort to appeal to such a diversified market.

As unfermented soy foods can be preserved for a short period, they can only be distributed over short distances. Thus, consumption experiences an obvious low season in summer, when plenty of vegetables are available. Then, demand is high in winter, when vegetables are expensive, and people are more inclined to have hot pot.

It is remarkable that GMO soybeans have been encroaching into the soy foods market. As GMO soybeans comprise a huge volume of imports and cost less, traces of "Gulf soybeans" can now be seen in soy foods plants in almost all provinces in the country, except for Heilongjiang Province and Tibet. Especially, small food workshops, who are under less supervision, are happy to purchase GMO soybeans and have developed the habit of feeding GMO soybeans to their facilities. For almost all kinds of soy foods products, GMO soybeans have made successful substitutions of non-GMO soybeans. The exception is the production of rolls of dried bean-milk cream, which stays with non-GMO soybeans due to technical barriers.

## MAJOR ORIGIN COUNTRIES FOR IMPORTED NON-GMO SOYBEANS

China became a net importer of soybean in 1996. In 2001, the country published and enforced Regulations on the Safety Management of Agricultural Genetically Modified Organisms. During the period in between, GMO soybeans were not separated from non-GMO soybeans.

In 2022, China's customs authority assigned a separate HS code for non-GMO soybeans, and since then in the official customs statistics reports, imported non-GMO soybeans can be clearly told from GMO soybeans.

Since 2021, the country imported over 1 million metric tons of non-GMO soybeans per year. In 2023, the volume was 1.7 million MT.

Per the phytosanitary protocols that China has signed on soybeans with other countries, and per customs statistics, possible origins of imported non-GMO soybeans include Benin, Canada, Ethiopia, Kazakhstan, Russia, Tanzania, Ukraine, the U.S. and possibly Argentina, Brazil and Uruguay.

All these origins can be divided into “qualitative” origins, including Benin, Ethiopia, Kazakhstan, Russia and Tanzania. In these countries, GMO soybeans are not planted, so the harvest is theoretically pure non-GMO soybeans. “Quantitative” origins, including Canada, Ukraine and the U.S., are countries planting both GMO soybeans and non-GMO soybeans, and thus a purity threshold is set for non-GMO soybeans. Above the threshold, soybeans are considered non-GMO, and below they are GMOs. As for the standard of quantitative non-GMO soybean recognition, the EU sets it at 99.9%, Japan usually at 98% and South Korea at 97%.

### THE U.S. AND CANADA

The U.S. is one of the places that GMO soybeans originated, and it was the largest origin country of China's imported soybeans. In the U.S., non-GMO soybean production is about 7 million MT per year, mostly for export plus a small volume for domestic consumption.

Of all the destination countries of non-GMO soybeans exported from the U.S., China is a small market in terms volume. There are three reasons for this. One is that China has been importing large volumes of GMO soybeans from the U.S. year after year, and many Chinese people equate U.S. soybeans to GMO soybeans. Secondly, many U.S. non-GMO soybean varieties have a black hilum, and Chinese buyers hold the misunderstanding that black-hilum soybeans are GMOs. These black-hilum non-GMO soybeans cannot sell at the normal premium over GMO soybeans. Lastly, China's non-GMO soybean volume started to increase rapidly in 2017, but China and the U.S. had trade conflicts in 2018, which hindered the import of U.S. non-GMO soybeans in China.

As USSEC continues to introduce U.S. non-GMO soybeans, some Chinese traders and end users have dispelled the prejudice and started trial use of some high-protein varieties of U.S. non-GMO soybeans. Some positive cases were seen in 2021 and 2022.

However, the world soybean supply has been tight since marketing year 2022/23 and the Chicago Board of Trade, or CBOT, price has been high, pushing the cost of U.S. non-GMO soybeans even higher. At the same time, China initiated its Soybean Revitalization Plan in 2019 and harvested two bumper crops in the falls of 2022 and 2023 consecutively.



This restrained the price of domestic soybeans and dimmed the outlook for U.S. non-GMO soybean exports to China.

Similar to the U.S., Canada produces about 1 million MT of non-GMO soybean per year, mostly for export to the EU, Japan and Korea, with minimal volume to China. It is worth mentioning that Canadian non-GMO soybeans are more popular in China than those of U.S. origin. For many Chinese non-GMO soybean buyers who have made an early start in the industry, Canadian non-GMO soybeans have become the definition of high quality and high price. Part of the reason is that most Canadian non-GMO soybeans are white-hilum varieties, hitting the appearance preference of Chinese users.

Imported non-GMO soybeans of both U.S. and Canadian origins are mostly distributed to soy foods customers in China. Subject to the quantitative definition, these soybeans are rarely purchased by soy protein plants.

### UKRAINE

Ukraine seems to be a unique case, in which there is no segregation of GMO soybeans from non-GMO soybeans. The selection of soybean seed is rather casual, as many farms grow mixed varieties and reserve soybean seeds from the previous crop.

The country produces 3 to 4 million MT of soybean per year. In theory, no GMO soybean varieties are planted in Ukraine, and harvested crops must go through testing to determine if the soybeans are GMO or non-GMO. Per third-party research, about half of Ukraine's soybeans can meet the purity requirement of 99.9%.

Some Ukrainian soybeans will be crushed in the oil plants around the Black Sea region, some shipped to the EU and some delivered to Belarus on the land border.

Ukraine started exporting soybeans to China in 2013. Through 2018, Chinese buyers found various problems, including deficient non-GMO purity, mold during transit, and high content of broken and damage kernels. In 2018, China imported only 4,000 MT of soybeans from Ukraine.

The situation started to improve in 2019, especially when China's demand expanded in 2020 during the COVID-19 pandemic, and the domestic crop had a poor harvest in 2021. Ukraine exported 40,000 to 60,000 MT per year to China during those years.

After breakout of the Russia-Ukraine conflict, the Belarus market was gone, which pressurized sales of Ukrainian soybean. In the other direction, container shipments on the Black Sea were blocked. As non-GMO soybean exports were fully dependent on container shipment, exporters have to ship the cargo to a third country via railway before loading it onto oceanic container liners. This creates more challenges in freight rate, transit time and quality control.

Imported non-GMO soybeans from Ukraine were used by soy foods customers in China, often mixed with local varieties from Henan Province due to similar appearance. Basically, soy protein plants do not consider purchasing Ukrainian non-GMO soybeans.

## RUSSIA AND KAZAKHSTAN

Kazakhstan produces less than 200,000 MT of soybeans per year. Major soybean growing areas are concentrated around the country's southern state of Almaty. In 2023, Kazakhstan exported 8,500 MT of soybeans to China. Kazakhstani soybeans are generally of modest protein content and mainly supplied to domestic crushers and oil plants in Uzbekistan. Since 2019, the country started to implement its Northern Soybean Plan, targeting to increase soybean acreage to 1.5 million hectares by 2024. Thus, soybean production could be increased to 3 million MT per year.

This plan is obviously behind schedule, but its potential deserves attention. After all, Russia exported several hundreds of thousand tons to China when the two countries signed soybean phytosanitary protocol in 2016. In only seven years, Russia has become the largest origin country for China's imported non-GMO soybeans.

In 2016, when Russia and China signed the protocol, Russia's export of non-GMO soybeans was limited to certain regions or states. In July 2019, all of Russia was permitted to export soybeans to China. In 2020, Russia started to introduce China's quality soybean seeds. In 2023, Russia exported 1.29 million MT of non-GMO soybeans to China, accounting for 76% of China's non-GMO imports.

Russia's soybean acreage is concentrated in the far east, where farms are often rented and run by Chinese. After a decade of development, Russian soybean exports to China have formed distinctive characteristics.

First, shipment distance is short. It's only about 100 to 200 km (about 60 to 125 miles) from the far east production area to the land ports of Suifenhe or Donging in China, over which cross-border trucks can easily ship soybeans. Containers and small bulk vessels departing Vladivostok can reach Tianjin in 8 to 10 days, so fast that shipping documents by courier service can hardly get to consignees before cargo arrival.



For importers, the short distance means a huge advantage in lowering the position risk when cargo is in transition.

Second, the lot size is handy. The land port of Suifenhe can receive 25-MT truck loads. Heihe Port can receive 23-MT containers. Tianjin Port can berth 3,000-MT to 5,000-MT bulk vessels. And, east China's Nantong Port had the record of receiving 14,900 MT of Russian soybean vessels.

Third, trading means are flexible. In addition to ordinary trading, there are other flexible trading means available at the land ports, including small-amount border trade and border civilian trade.

Lastly, Russian soybean varieties match the Chinese demand. As mentioned above, some Russian farms are planting soybean seeds imported from China's Heilongjiang Province. In addition, most soybean varieties are of white hilum, accommodating the preference of Chinese buyers.

Imported Russian soybeans are widely used by soy foods customers and soy protein plants. In some cases, low-protein Russian soybeans were distributed to Chinese oil plants. However, imported Russian soybeans occasionally fail GMO tests when delivered to soy protein plants. The guess is that excessive chemical glyphosate residue content deceives the strip test.

Of all origin countries of China's imported non-GMO soybeans, Russia, as a strategic partner, has made its position increasingly important.

## BENIN, ETHIOPIA AND TANZANIA

China has accepted non-GMO soybean imports from three African countries. In 2019, China signed soybean phytosanitary protocol with Benin. In 2020, China signed phytosanitary protocol with Tanzania. In addition, China previously signed with Ethiopia.

Each of these three countries produces at least 100,000 to 200,000 MT of soybeans per year. Benin has expanded its production to 250,000 to 300,000 MT per year. In 2021, driven by export margins, Benin sold 230,000 MT of soybeans to China, which was even bigger than its domestic crop of 220,000 MT.

Soybean varieties from these three countries are similar. Most of them have light brown hilum, mixed with some minor black hilum.

Trades for African soybean exports to China are less reliable, and shipping document circulation is slow, which impaired the popularity of African soybeans in China. The bright side is that quality control in origination is acceptable, and all of them are qualitative non-GMO soybeans, making them popular among Chinese soy protein plants.

## BRAZIL, ARGENTINA AND URUGUAY

South America is the world's largest growing area of GMO soybeans. China buys more than 70 million MT of soybeans from Brazil, Argentina and Uruguay.

At the same time, these three countries reserved some acreage for conventional soybeans, which are non-GMO soybeans. Brazil has a non-GMO acreage of about 2% of its total soybean planting area. To estimate from Brazilian soybean total production, non-GMO soybean production is around 3 million MT per year. In regard to actual export records to China, both Ningbo Port and Nantong Port used to receive Brazilian non-GMO soybeans.

Argentina and Uruguay have a certain acreage for non-GMO soybean, as well. But their growing areas and production are not disclosed in detail. The author is unaware of any actual arrival in China.

The logistics situation in South America is different from the U.S. and Canada. There is no mature system of railways and trans-loaders, so that non-GMO soybeans could be segregated from the huge volume of GMO soybeans. Thus, deficiency in non-GMO purity has become a general issue and led to risk in clearance into China.

In addition, the on-site quality control when filling containers is not strict in these countries, and the long voyage to China crosses the equator, increasing the risk of mold and heat damage.

The volume from these origins to China is minimal and has made little significance to China's import of non-GMO soybeans.

In the future, China's non-GMO soybean import demand will depend significantly on how to segregate its domestic GMO soybean crop from the conventional non-GMO crop. Another major factor will be if the zero-tolerance recognition method continues to be adopted for non-GMO purity.



# Developing Supply Trends

## CONSUMPTION TRENDS

China consumes a huge volume of soybeans that go to three major sectors: crush, soy protein and soy foods. The crush sector consumes mainly imported GMO soybeans and the volume is around 95 million MT per year. Non-GMO soybean volume going into crush is only about 1.8 million MT.

The finished products from crushing imported GMO soybeans include soybean oil and soybean meal, of which the latter is the essential motivation. Soybean oil as a standard industrial product can be bought from various origin countries, while soybean meal is subject to phytosanitary protocol, which China has only signed with Brazil, Argentina, Uruguay and Russia. Taking into account the multiple technical complications in soybean meal importation, China imports a minimal volume of meal. Soybean meal from crushing imported GMO soybeans is mainly used as feedstuff for animals, poultry and aquatic products, which in turn provides meat, eggs and milk to the market.

The major drive for meat, eggs and milk consumption is economic development and improvement of people's standard of living. Ancient China used to live on a comparatively vegetarian diet, consisting of more grains than meat, eggs and milk. Since the opening and reforms of the 1980s, China has made giant strides in economic development, and dietary patterns also shifted remarkably. Statistics show that compared to 1980, China's meats production in 2021 increased by 700%, poultry eggs by 300% and milk by 3,200%. These increases without doubt are the consequences of the expanding scale of feeding and slaughtering. So, it's no surprise that China started net-importing soybeans in 1996 and that in 2020 the import volume hit 100 million MT.

Currently, the demand for soybean meal is experiencing some significant changes. First, China's GDP growth rate has slowed down from 7-era to 5-era. Secondly, China's population is aging, and the natural population growth rate became negative in 2022. Thirdly, the urbanization process tends to saturate, growth of migrant workers is slowing down, and the realty market remains slow. Fourthly, consumption prices deflated and people's consumption degraded after the COVID-19 pandemic period. And last, more substitutes for soybean meal have become available in the feedstuff formula, and the overall blend percentage of soybean meal in feedstuff is dropping.

In addition to the fact that China has been encouraging domestic growing of soybeans in the past several years and diversifying origin countries of imported soybeans, there is reason to believe that China's demand for imported soybeans will peak soon or may even have peaked already and will begin to fall back.



Another important consumption sector is the soy protein industry, which represents a processing capacity of 3 million MT of soybeans per year and supplies about 1.2 million MT of finished products. China's soy protein industry mainly uses domestic non-GMO soybeans, though some factories accept imported non-GMO soybeans. About half the volume of finished products will be exported, and the balance is for domestic consumption.

Export volume of soy protein reached its peak at the end of 2021 and started to fall in the beginning of 2022. Domestic consumption of soy protein also faces challenges. In the three-year COVID-19 pandemic period, China's online business model made huge progress, and takeaway foods and prefabricated dishes prevailed and squeezed the demand for instant foods and snack foods, which casts a shadow on the domestic consumption of soy protein.

Since the second half of 2022, the processing margin of soy protein factories has been staggering and did not witness any sign of improvement until the end of 2023.

China's domestic GMO crop is expanding, and the country is facing challenges in how to segregate domestic GMO soybeans from traditional soybeans. Thus, it becomes tougher than ever to secure the supply of raw material for soy protein facilities. On the other hand, if GMO soybeans are permitted to enter the foods sector, soy protein facilities will have to divide production lines into non-GMO soy protein for export and GMO soy-protein for domestic consumption. In either case, any significant growth in soy protein production can't be expected.

As for soy foods, the sector has been consuming a stable growth in volume of soybeans in the past decade, which is in line with the strong demand for meat, eggs and milk.

As economic growth slows down and consumption tightens, demand for soy foods has a more optimistic prospect because it is an economical, nutritious source of protein. In the future, if GMO soybeans are allowed to be used in the foods sector, the cost of raw materials for soy foods will reduce significantly. Soy foods would become more competitive against meat, eggs and milk, and thus have better chances for improvement of consumption.

In summary, soybean crush tends to get saturated, prospects for the soy protein industry are not bright, but the soy foods sector is more stable and optimistic.



## SOYBEAN GROWING TRENDS: OIL OR PROTEIN? NON-GMO OR GMO?

China's domestic soybean production experienced twists and turns in terms of choosing high-oil varieties or high-protein varieties. Compared to Northeast China's Heilongjiang and Inner Mongolia provinces, middle China and east China, represented by Jiangsu, Hubei and Anhui provinces, have many excellent soybean varieties, thanks to the delicate cultivation of land. For example, the Cuishan variety from Jiangsu Province can easily hit 44% protein on a dry matter basis, and its selling price is usually 40% to 50% higher than soybeans from the Northeast. These provinces have less leveled cultivated land that is not suitable for large machines, and thus their soybean variety choices are limited, unlike in Northeast China.

Since the year China became a net soybean importer, the country used to encourage growing high-oil soybeans for five or six years due to the rapid growth of soybean oil demand. However, no matter how quickly the domestic crop gained in production, the pace of soybean oil and soybean meal consumption growth was much quicker. The volume of soybean imports increased year over year, making importation the only solution to meet demand.

After that period, there was a long time when no specific variety orientation was identified for soybean production in Northeast China. The market repeatedly proved that high-protein soybeans provided better value than high-oil varieties, because imported GMO-soybeans had higher oil content, lower prices and came in huge supplies. In recent years, growers and seed developers in Northeast China came to realize that they should focus on high-protein soybean varieties, so as to make more value in the soy protein industry and soy foods sector. As for the crush demand, it can just be left to imports.

It is worth mentioning that in China's *Soybean Revitalization Plan*, soybeans were repeatedly mentioned and treated as oilseeds, in parallel with rapeseed and sesame seed. This does not align with the fact that domestic soybeans are currently an important food raw material and protein source, rather than oilseeds.

The planting of Chinese GMO soybeans will also play an important role in the market. As of this writing, China planted GMO soybeans and corn in eight provinces in 2024. The planting of GMO grain has finished its pilot program and has entered the large-scale demonstration stage. The media currently is calling genetic modification and gene editing "the jewel on the crown of agriculture." This view is so strongly affirmative that readers cannot help recalling the fierce controversy about GMOs 10 years ago. At that time, the debate between a well-known journalist and college professor lasted for one year around the security, procedure and ethical issues of GMO technology. It attracted the attention of most Chinese people. At that time most people had little knowledge about GMOs and held skeptical or even negative attitudes about it.

In the past decade, China has approved many GMO corn and soybean varieties with self-owned intellectual property, as guided and regulated by its GMO-related laws and regulations. Pilot programs of many varieties have been finished, and commercial planting is just around the corner. However, there are uncertainties about whether China's domestic GMO soybean crop can be segregated in full accordance with Regulations on the Safety Management of Agricultural Genetically Modified Organisms.



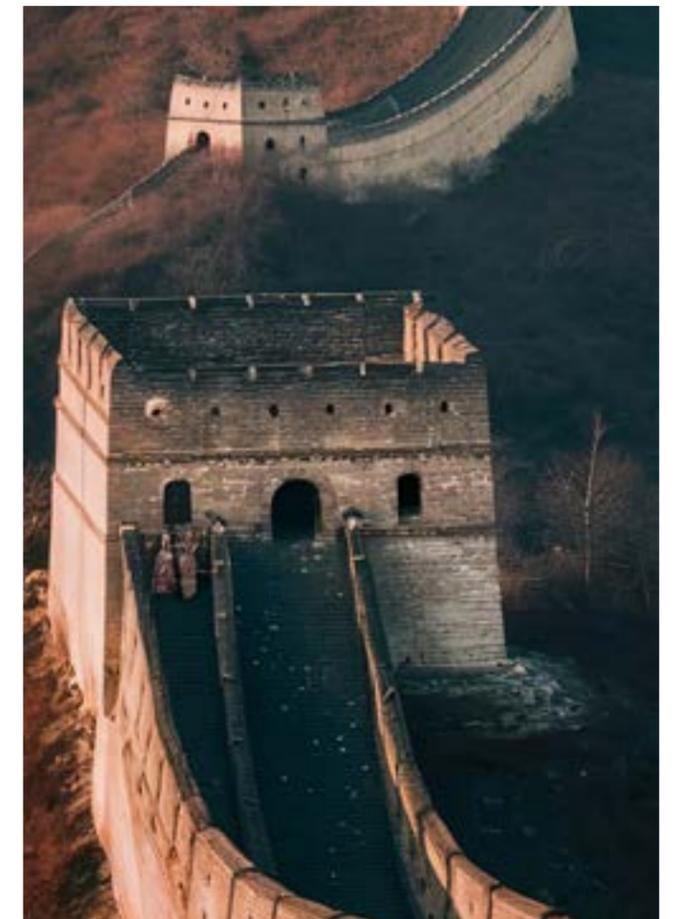
For a long time, imported GMO soybeans were comparatively easy to control, as they are subject to importation clearance procedure and buyers/importers are concentrated.

Thus, the safety management of imported GMO soybeans has been under good control.

However, the flow of cargo in domestic trade is much more scattered and flexible, making it much tougher to control than imported cargo. It will make significant impact to China's soybean planting pattern whether domestic GMO soybeans can be effectively controlled and strictly segregated, so as not to contaminate the non-GMO soybean crop.

Another thing that may draw attention is that on October 18, 2023, the Chinese Ministry of Agriculture and Rural Affairs openly sought advice on revising Managing Methods for Labeling Agricultural Genetically Modified Organisms. The most significant change was that, for corn, soybean and canola grains or products, GMO should be labeled when GMO content in any single crop is over 3%. The period for openly seeking advice cut off on November 17, 2023. On May 18, 2024, the in-office Minister of Agriculture and Rural Affairs, Mr. Tang Renjian, was suspected of serious violations of discipline and law and is currently under disciplinary review and investigation by the Central Commission for Discipline Inspection and the National Supervisory Commission. It may become doubtful if the revision of the Methods can be pushed forward as scheduled.

All in all, the general goal is consistent to expand domestic production and reduce dependence on imports. The kind of route and strategy China will take in growing domestic soybean production will make much difference in the progress to realize that goal.





# Soy Foods Production and Consumption

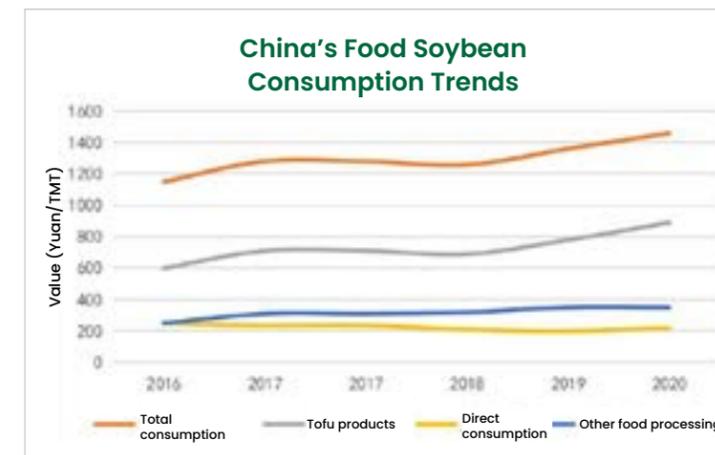
China is the birthplace of tofu products and the world's largest consumer of them. Soybeans, a traditional Chinese food, have been deeply loved by Chinese people. With the improvement of living standards and the acceleration of pace of life, people pay more attention to nutrition and health. The nutritional ingredients in soybeans meet their demands. The proportion of tofu foods consumption in people's dietary consumption structure is increasing.

Non-fermented and fermented tofu products are common in China. Non-fermented tofu products mainly include traditional tofu, soy milk, dried tofu and yuba, as well as soybean protein, that is, new tofu products. New products include soybean protein and its puffed food, soybean meat, etc. Fermented tofu products mainly include soy sauce, soybean paste, sufu, tempeh, etc. Besides the new tofu products of soybean protein, the above are well-known traditional foods in China, important to every household.

According to the survey data of tofu products enterprises nationwide by the BPCA, the soybean consumption in China's food industry in 2020 was about 14.6 million MT, an increase of about 7.4% compared with 2019, showing an upward trend.

Compared with 2019, the consumption of processed soybeans in 2020 increased by 11%, to 8.9 million MT, accounting for about 61% of the total soybean consumption in China's food industry.

In the last five years, the soybean consumption in China's tofu food industry as a whole showed an upward trend, while the soybean consumption in tofu products also showed an obvious upward trend.



Source: Annual reports of the BPCA

Although China's tofu product manufacturing industry has existed for thousands of years and has a large volume, quite a number of enterprises in the market are small and micro-enterprises with about 10 employees. These businesses are difficult to develop into large-scale enterprises in a large batch in a short period of time.

In 2016, the number of manufacturing enterprises with production licenses in China's tofu products industry was approximately 5,000. That number was expected to reach 10,000 by 2020. With the further optimization of the industrial structure, the ratio of large-scale enterprises to small and micro-sized enterprises will change from the original 3:7 to a more reasonable 7:3 in the future.

This indicates that the conventional tofu products in the market will be mainly supplied by large-scale enterprises, and the specialty and customized small products will be jointly supplied by small and micro-sized enterprises and large-scale enterprises.

## LARGE-SCALE ENTERPRISES IN THE TOFU PRODUCTS INDUSTRY

According to the announcement of the Top 50 Brand Enterprises in China's Tofu Products Industry in 2021 issued by the BPCA, the current large-scale tofu food product enterprises are mainly concentrated in the Yangtze River Delta region where the population is relatively dense and the economy is relatively developed. Others are located in the central region with a developed agriculture industry, such as Anhui and Hunan, as well as the Sichuan and Chongqing areas. The development level of tofu products production is unbalanced and gradually decreases from southeast China to northwest China.

Among the top 50 enterprises, 23 provide fresh tofu products, an increase of two over the previous year. Eight companies engage in soy milk and soy milk powder, a decrease of one over the previous year. The 14 enterprises mainly offering tofu snacks remain unchanged from the previous year.

Six other tofu product businesses focus on fermentation, puffing, yuba, protein, etc., also unchanged from the previous year.

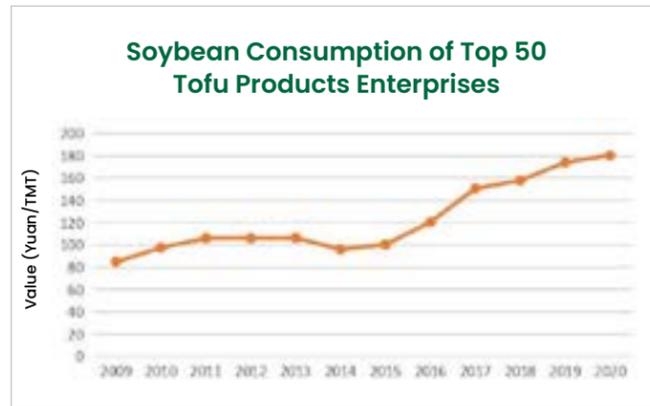
According to the nationwide statistics of the BPCA on large-scale tofu products enterprises in 2020, the sales volume and soybean consumption of the top 50 large-scale enterprises in the tofu products industry in 2020 increased compared to 2019. The soybean consumption was 1.8 million MT, an increase of 4%. Sales reached \$4.5 billion, an increase of 9.2%. The tax paid in 2020 increased by 20.5% compared with 2019, 17.6% compared with 2018 in 2019, and 11.2% compared with 2017 in 2018. After-tax profit in 2020 increased by 9% compared with 2019, 24.5% compared with 2018 in 2019 and 9.5% compared with 2017 in 2018.

### INTRODUCTION OF KEY SECTORS OF SOY FOODS

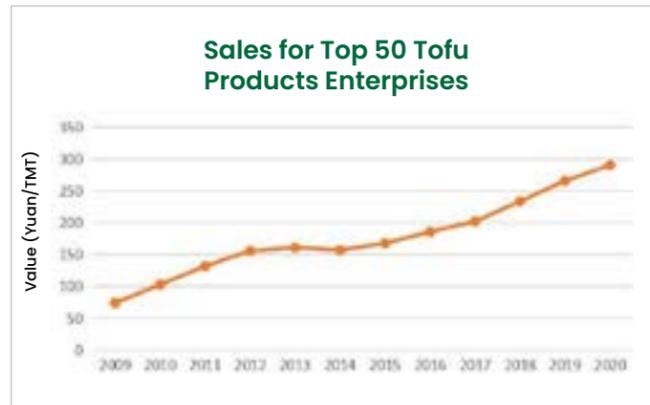
From the perspective of market size, the consumption of fresh tofu products, \$9.9 billion, plant protein drinks, \$5.9 billion, and snacks, \$3 billion, in 2020 is relatively large.

Fresh tofu products have strong market growth potential due to characteristics of meeting the needs of healthy diets. From 2013 to 2020, the amount of soybeans used by top 50 large-scale enterprises for fresh tofu products increased from 310,500 MT to 575,500 MT, with a compound annual growth rate of 9.2%.

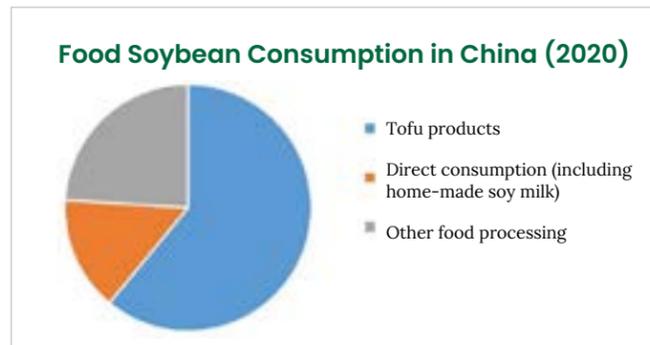
Soy protein drinks provide benefits, including low cholesterol, low saturated fat, plant protein and more, which are in line with the trend of healthy consumption; therefore, the plant protein drink industry has achieved rapid development. From 2014 to 2020, the soybean consumption of 50 large-scale enterprises for plant protein drinks increased from 300,700 MT to 476,000 MT, with an annual compound growth rate of 8%.



Source: Annual reports of the BPCA



Source: Annual reports of the BPCA



Source: Industry reporting



Source: BCPA



Snacks are vegetarian foods. For example, dried tofu and other tofu foods can be made into small packaged instant foods with unique flavor and suitable for leisure and tourism, thus expanding tofu products from traditional dishes to leisure and convenient foods. According to the data, from 2014 to 2020, the soybean consumption of the top 50 enterprises for snacks increased from 239,800 MT to 376,200 MT, with an annual compound growth rate of 7.8%.

Among fermented tofu foods, soy sauce is an indispensable condiment for Chinese families. According to the data of the China Condiment Industrial Association (CCIA), among the top 100 condiment enterprises in China from 2016 to 2019, the sales revenue of the soybean sauce businesses showed an upward trend year-by-year. In 2019, the sales revenue reached \$4.3 billion, up 13.2% from 2018, accounting for 27% of the total sales revenue of the condiment industry. Foshan Haitian flavoring and Food Co.Ltd. (Haitian) has a market share of about 17%, and the top three brands have a combined market share of 27% in China's soy sauce market. Haitian prospectus shows that it purchased \$66.2 million of soybeans in the first half of 2013, and the spot price of domestic soybeans in 2013 was \$106.50 per MT.

### INDUSTRY PROSPECTS

From the perspective of human health, the trend is to increase the proportion of soybean protein and other plant proteins in daily diets. Plant-based food consumption likely will become a more common choice in human diet structure.

Additionally, China's tofu products have a development history of more than 2,000 years, which contain the concept of Chinese culture. All these factors are bound to promote the development and optimization of tofu products industry.

In the 2020 annual report of the tofu products industry, the BPCA put forward the future development goal: the consumption of soybeans for food could increase by more than 1 million MT in the future. By the end of 2025, the consumption of soybeans used in the catering industry as an auxiliary or cooking material may reach 6 million MT. The consumption of soybeans for snacks is projected to be 3.5 million MT. The consumption of soybeans used in soy milk categories, including flavored soy drinks, could be 800,000 MT, based on one cup of flavored soy drinks and one cup of milk per person per day. The annual consumption of soy drinks per person in China is expected to reach 30 kg (66 pounds) and the consumption of soybeans will reach 5 million MT. Direct consumption, including homemade soy milk, of soybeans should be 2 million MT, slightly less than now. Soybean consumption for soybean protein and food industry ingredients may reach about 4 million MT. The average output value of soybeans per 10,000 MT should be \$250 million, an increase from \$160 million today, and the total output value of the industry should reach \$300 billion.



# New Trends in China's Soy Foods

China is the source of tofu foods culture, with the longest history of soybean consumption. China's tofu foods are healthy, safe and nutritious, featuring numerous varieties and comprehensive nutrition, suitable for all ages. Traditional Chinese tofu products can be divided into two categories: non-fermented and fermented.

Non-fermented tofu products include home-cooked dishes, such as boiled beans and fried beans, made directly from soybeans, as well as stir-fry and soup made with soybeans and supplemented by other ingredients. Traditional tofu products also include hydrated products like tofu, semi-dehydrated products like dried tofu and beancurd sheets, fried products like oily bean curd and fried bean balls, marinated products such as marinated dried bean curd and spiced dried bean curd, dried products such as yuba and more.

Fermented tofu products include tempeh, soybean paste for sweet noodle sauce or soy sauce, sufu and others. These traditional tofu foods or products passed down from generation to generation are deeply loved by the Chinese public. With changing times and the advancement of science and technology, in addition to traditional edible soybean oil, more and more deep-processed tofu products are constantly emerging in the market. Examples include flavored soy drink and soy drinks powders; derivative products made of soybean protein, such as soybean protein powder; various solid drinks with soybean protein; and ready-to-eat snacks with soy protein as the main ingredient.

## PLANT-BASED MEAT

The consumption of meat products in various countries has increased rapidly due to the continuous improvement of living standards. It is estimated that by 2030, the supply gap of China's meat products will reach 38 million MT, which will seriously threaten the country's grain reserves and food security.

To deal with such problems, related research on plant-based meat has attracted extensive attention in recent years. Plant-based meat refers to food with a similar flavor, texture and morphology of meat products, processed with soybean, pea and other plants as raw materials combined with vegetable oil and flavor substances. As a result, the plant-based meat product series, a new application field of soybeans, began to take root and sprout.

Regarding consumers' acceptance of plant-based meat, foreign scholars and institutions have carried out some surveys and studies. According to the investigation by Bryant and other scholars, consumers in the three most populous countries in the world, namely the United States, China and India, have very high acceptance of vegetable meat products, even more than 90% in China and India.



Other scholars conducted an email survey and found that if the price is the same, about 21% of the respondents will choose plant-based meat burgers instead of beef burgers. In consideration of the size of the global burger market, the development of plant-based meat is economically feasible. At present, there are few academic studies on Chinese consumers' acceptance of plant-based meat products.

The summary information of investigation and research in several major industries is shown in the table of Plant-Based Meat Companies and Products in Chinese Market. Chinese consumers have a high degree of acceptance of plant-based meat, showing a strong desire to buy and eat these products. Despite a large gap between the Chinese and global plant-based meat market, players are very optimistic about its prospects and believe the Chinese market has great potential for development.

However, the localization of plant-based meat in the Chinese market still faces many challenges, mainly due to taste and price. Many people tried the plant-based meat products of multiple restaurant chains and brands immediately after they were launched.

The majority of consumers reflected that the taste of plant-based minced beef is indeed different from that of real beef, and the former lacks meat texture and chewiness. Therefore, in order to promote plant-based meat in the Chinese market, production technology and technical transformation must improve. In terms of price, taking Starbucks as an example, four plant-based meat products are in the plant-based diet category on its delivery menu page, with prices ranging from \$5.40 to \$7.50.

The price of Starbucks' plant-based meals is the highest among all categories, about 20% higher than that of similar animal meat products. The same is true of IKEA, where the retail price of plant-based protein meatballs is \$6.10, 21% higher than the retail price of classic meatballs, \$5.10. Price affects the threshold of consumption, and large-scale production can make the price of products more friendly. Nestle announced the completion and commissioning of its first Asia plant-based production line in Tianjin, China. The production line began construction in May 2020, with a total investment of about \$112.9 million, and the design capacity of the production line is 8,000 MT per year. And Starfield expected that by the end of 2021, the first self-built, large-scale production and research base will be completed and put into production.





The base will include nine items in three categories, covering more than 300 detailed plans for plant-based meat products. The expansion of production capacity can reduce the price of plant-based meat products, smooth the of upstream and downstream supply chains, and ensure food safety.

Considering the trends around environmental protection, healthy diet and the purchasing power of the new generation of consumers, the demand for soybean-based meat is expected to increase significantly in the future, which will help promote the transformation of production methods. Expanding the production of plant-based meat may reduce greenhouse gas emissions compared to animal husbandry, and environmental protection is a key concern of Chinese government in recent years. From the perspective of ensuring people's livelihood, plant-based meat can be used as a supplement to further stabilize the meat supply market. Finally, plant-based meat can balance consumers' diet and enrich their choices.

Plant-based diets may improve the health of the human body. The development of plant-based meat industry can coordinate balanced development between humans, society and nature.

### Plant-Based Meat Companies and Products in the Chinese Market

Enterprise Nature	Enterprise Name	Types of Plant-Based Meat Products
Foreign-invested enterprises	Beyond Meat	Plant-based meat patties, chicken nuggets, etc.
	Impossible Foods	Plant-based meat patties, chicken nuggets, etc.
	Nestle	Plant-based meat patties, chicken nuggets, etc., braised pork ball in brown sauce
	Unilever	Plant-based meat patties, chicken nuggets, etc.
Domestic enterprises	Jinzi Ham	Plant-based beef patties, sausages
	Hangzhou Be&Cheery	Spicy plant-based beef, small sausages
	Shenzhen Starfield	Plant-based meat patties, chicken breast
	Shenzhen Qishan Foods	Veggie sausages
	Jiangsu Hong Chang Foods	Black pepper plant-based pork chops
	Ningbo Sulian Foods	Western style hamburger steak

### Plant-Based Meats Sales Channels in China

Sales channel	Channel	Examples
Sales channel	Online	E-commerce platforms such as Tmall, JD.com, Suning and Meituan
	Offline (Supermarkets)	Supermarket stores such as RT-Mart, Auchan, Hema Xiansheng, etc.
	Offline (Catering)	KFC, Pizza Hut, McDonald's, Starbucks, Dicos and other chain fast food restaurants

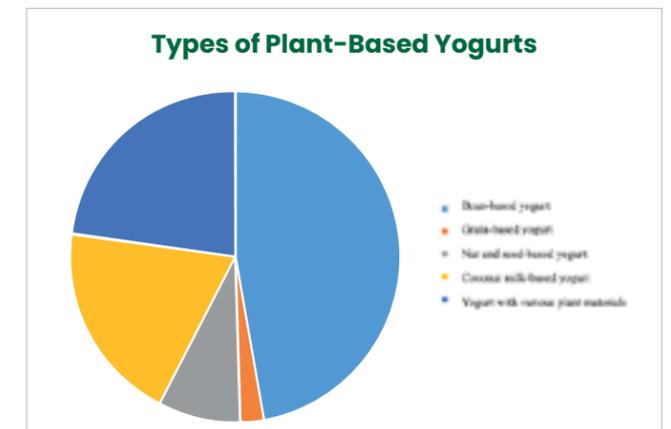
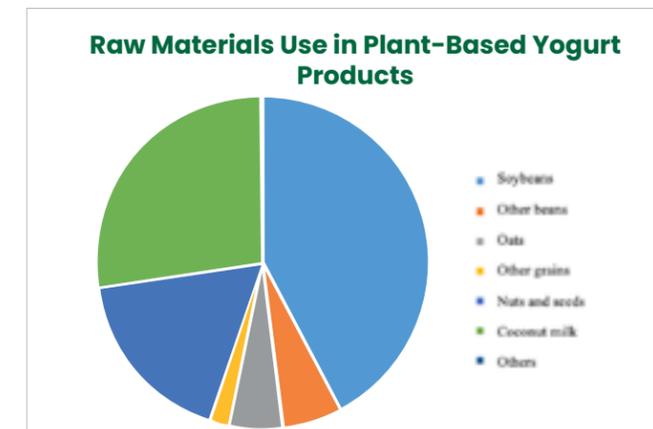
## PLANT-BASED YOGURT

In addition to plant-based meat, a new kind of plant-based food, plant-based yogurt mainly made from soybeans, is also popular in the world in recent years. Plant-based yogurt can be made from beans, nuts, grains or other plants, such as soybeans, peas, almond, cashews, oats or coconut milk. Plant-based yogurts derived from soy, peas and legume blends have complementary advantages of low saturated fatty acids, no cholesterol and trans fatty acids, compared with traditional animal yogurt. Plant-based yogurt products have been widely recognized by consumers in foreign markets including Europe and the United States. The relevant data of the plant-based yogurt market shared by Euromonitor International reflects that the global plant-based yogurt market in 2018 was \$974 million, while the Chinese plant-based yogurt market was just getting started. Beijing Institute of Nutritional Resources collected and investigated 1,709 foreign plant-based yogurt products, and made statistics on the raw materials used, as shown in the first chart below.

And according to the product formula, the number of products using different plants was counted, as shown in the second chart.

It can be seen that soybean-based yogurt accounts for the majority. As an important food crop, soybeans have the highest protein content of plant-based options. The protein content of soybean is about 40%, which is higher than other food crops, like peas. Soybeans in foods like yogurt can provide part of the protein required by the human body. Double-protein yogurt contains milk and soybean protein. Companies producing double-protein yogurt claim it delivers a variety of nutritional benefits.

Currently, the Chinese plant-based yogurt market has just arisen, and the variety of products needs to be enriched. With the improvement of the production process, plant-based yogurt, as a new food that conforms to the development outline of inheriting the fine dietary tradition of mainly plant-based foods and supplemented by animal-based foods has huge development space and broad market prospect.



Source: Zheng Chenxi, Xu Bin, Zhai Penggui, Nutrient Content Distribution of Foreign Plant-Based Yoghurt, Food and Nutrition in China, 2022, 28(1): 38-43



# Labeling Requirements and Precautions for Soy Foods

The import, breeding and planting of genetically modified soybeans not only fall within the scope of crop-related laws, but also involve the legal relations of GMO and food safety. Therefore, many laws and regulations apply to genetically modified soybeans. This report discusses the relevant provisions of labeling management. Currently, GMO labeling management is mainly divided into four categories worldwide: voluntary labeling, quantitative comprehensive mandatory labeling, quantitative partial mandatory labeling and qualitative mandatory labeling based on catalog. China now adopts the latter. The following will further discuss the management of soybean labeling in China.

## LEGAL PROVISIONS AND REQUIREMENTS

### PRODUCTION AND PROCESSING OF NON-GENETICALLY MODIFIED SOY FOODS

#### Permit Handling

According to the Food Safety Law, the state implements a licensing system for food production and operation. To engage in food production, sales and catering services, a license must be obtained. However, those who sell edible agricultural products and only sell prepackaged foods do not need to obtain this license. Those who sell only prepackaged foods report to the supervision and administration department of food safety of the local government at or above the county level for the record.

#### Safety of Food Production

According to the Food Safety Law, food production and operation shall meet food safety standards. The production of food-related products must comply with laws, regulations and national food safety standards. The food safety management system shall be established and improved, including the following areas: establish and implement health management system for employees; establish food safety self-inspection system; establish food ex-factory inspection record system. Food traders have to store food in accordance with the requirements of ensuring food safety, regularly inspect the food in stock and promptly clean up the food that has deteriorated or exceeded the quality guarantee period.



#### Management of Food Labeling

According to Administrative Provisions on Food Labeling, labeling needs to be attached to food or its packaging, except for food that may not be labeled according to laws and administrative regulations. The contents of food labels shall be true, accurate, easy to understand, scientific and legal. A food label states the place of production of the food, including the manufacturer name, address and contact information. Additionally, the place of production should be detailed to a prefecture-level city.

## PRODUCTION AND PROCESSING OF TRANSGENIC SOY FOODS

### Identify Agricultural Transgenic Organisms and Prohibit Changing Their Uses

According to the 2021 Work Plan on Agricultural GMOs Supervision issued by the General Office of the Ministry of Agriculture and Rural Affairs: "Ensure that all imported agricultural GMOs are used for raw material processing, and it is strictly prohibited to change their uses." Therefore, in processing, production enterprises need to check whether the agricultural products are GMOs, whether there is an agricultural GMO safety certificate, and ensure that all imported agricultural GMOs are used for raw material processing.

### Obtain Permission and Report

Any unit or person engaged in the production and processing of agricultural GMOs must obtain approval from the competent agricultural administrative department of the state council or province, an autonomous region and a municipality directly under the central government. It shall obtain the License for Processing Agricultural GMOs issued by the competent agricultural administrative department at the provincial level where the processing is located. To be compliant, the producer or processor has to organize production and processing in accordance with the approved varieties, scope, safety management requirements and corresponding technical standards, as well as regularly provide production, processing, safety management and product flow reports. At present, the relevant illegal acts in the industry mainly focus on the processing of genetically modified food without obtaining the agricultural GMOs processing license. According to the general office of the Ministry of Agriculture and Rural Areas, on February 9, 2021, Qiufeng Corn Production and Marketing Cooperative in Changtu County, Liaoning Province, was ordered to stop production and processing due to the illegal production and processing of genetically modified corn seeds. Administrative penalties included fines and confiscation of illegal genetically modified corn seeds.

### Safety Evaluation, Declaration and Approval

Those engaged in the research, test, production, processing, operation, import and export of agricultural GMOs within China that need safety evaluation in accordance with the regulations on the safety administration of agricultural GMOs shall abide by those administrative measures. Entities that engage in the research of safety levels III and IV for agricultural GMOs and the experiment and import of agricultural GMOs at all safety levels, as well as entities and individuals engaging in the production and processing of agricultural GMOs within China must, report or apply to the Office for the Safety Management of Agricultural GMOs at different stages as required.

According to the Ministry of Agriculture and Rural Areas, on February 9, 2021, when Nanjing Agricultural University applied for the production and application safety certificate to the GMOs safety management office, the genetically modified cotton Nannong 284 and Nannong 388 contained unapproved genes. The Ministry of Agriculture and Rural Areas rejected the application for production and application safety certificate according to law, and suspended the acceptance of the unit's application for production and application safety certificate for agricultural GMOs in 2021.

### Labeling Management of Genetically Modified Soybeans

Policies and regulations on agricultural GMOs and food safety have different requirements for genetically modified soybeans and products. Soybean seed, soybeans, soybean powder, soybean oil and soybean meal are listed in the catalogue of the first batch of agricultural GMOs subject to labeling management by the Ministry of Agriculture. Specific requirements include the following details.

#### Annotation Method

Genetically modified animals and plants, microbial products, seeds, breeding livestock and poultry, aquatic seedlings, pesticides, veterinary drugs and fertilizers, as well as additives containing genetically modified animals and plants, microorganisms or their product components, shall be directly marked with "genetically modified." Direct processed products of genetically modified agricultural products are marked as "genetically modified; processed products," "genetically modified; finished products" or "processed raw materials are genetically modified." Products processed with GMOs or containing agricultural GMOs where the final sales products no longer contain or cannot detect genetically modified

components, are marked either "this product is genetically modified, processed, but this product no longer contains genetically modified ingredients" or labeled "genetically modified ingredients in the processing raw materials of this product; however, this product no longer contains genetically modified ingredients."

As for the design and printing of GMO logos, when it is difficult to label the original packaging or label, the agricultural GMOs with special sales scope requirements and the language requirements of the logo are all clearly stipulated in the Regulation on Administration of Identity of Agricultural GMOs.



#### Marking Requirements

The mark of agricultural GMOs shall be eye-catching and designed and printed simultaneously with the product packaging and label. If it is difficult to mark on the original packaging and labels, the method of adding GMOs on the basis of the original packaging and labels can be adopted, but the additional labels should be firm and lasting.



#### Other Annotation Methods

When it is difficult to identify agricultural GMOs with packaging or labels, the following methods can be used. Agricultural GMOs in fast food and retail industries that are difficult to identify on each sales product can be identified on the product display stand or on the price tag. When selling agricultural GMOs without packaging and labels, they also can be identified by setting up identification cards. When agricultural GMOs packed in transport containers are sold directly without packaging, the sales site can mark the containers or set up labels for identification. When it is difficult to mark agricultural GMOs without packaging and labels with identification cards, the seller should make a statement in an appropriate manner. If the imported agricultural GMOs without packaging and labels are difficult to be marked with identification cards, they shall be indicated on the inspection application form.

#### Specific Requirements

According to the food safety law and other regulations, foods produced in China with non-GMO soybeans as raw materials includes labeling requirements and regulatory provisions for tofu products. If it is non-GMO food, there are no special requirements. If it is genetically modified food, it mainly implements the labeling standard requirements of prepackaged foods.



## EXTENSION OF PRACTICAL ISSUES

### INTERPRETING LABEL REQUIREMENTS

#### Should edible vegetable oils produced from genetically modified plants be labeled?

Yes, according to the announcement on strengthening the labeling management of edible vegetable oil issued by the State Administration of Market Supervision, the Ministry of Agriculture and Rural Areas and the National Health Commission. Genetically modified edible vegetable oil shall be prominently marked on labels and instructions in accordance with regulations. If China has not approved the import of genetically modified crops for processing raw materials and has not approved the commercial cultivation in China, and there is no such genetically modified crops and processed products on the market, the labels and instructions of edible vegetable oil shall not be marked “non-genetically modified.”

#### Should other prepackaged foods produced with edible vegetable oil produced from genetically modified plants be marked?

The responses of local regulatory authorities are different. For details, businesses are directed to ask the local regulatory authorities. According to the view of Sichuan Market Supervision and Administration Bureau, whether to mark or not requires the enterprise to refer to the relevant provisions of the Administrative Measures for the Marking of Agricultural GMOs and in combination with the product composition analysis and test results. According to the view of Anhui Drug Administration, the food processed with genetically modified soybean oil is not an agricultural GMO, is not in the label management directory and does not need to be marked forcibly.



## LABELING THRESHOLDS

Genetically modified food labeling thresholds should be defined by the Chinese government as the minimum limit that triggers its interpretation of eco-environmental safety or human health and safety concerns. In the world, there are many classifications of genetically modified food labeling systems. A mandatory labeling system is currently used by more than 60 countries or regions, including the European Union, Australia, New Zealand, China, Japan and Brazil. The voluntary labeling system of genetically modified food is mainly adopted in a few countries or regions such as the United States, Canada and Hong Kong, China.

According to China’s food safety law, provisions on the administration of food labeling, regulations on the safety administration of agricultural GMOs, measures for the administration of agricultural GMOs labeling, measures for the administration of safety review of new food raw materials and other relevant laws and regulations, China implements a compulsory labeling system for genetically modified foods. Relatively strict identification standards are adopted for genetically modified biological products, including animals, plants, microorganisms and their products. GMOs use genetic engineering technology to change the genome composition for agricultural production or agricultural product processing, without distinguishing the number or proportion of changed genomes. Positive identification takes the qualitative as the standard. As long as the food contains genetically modified components in the catalogue, it must be identified, and the threshold is not set considering the reality that accidental mixing may occur.



# Customs Clearance for Soybean Imports

Soybean import involves multiple legal fields and regulatory authorities. The laws and regulations in these fields have been revised many times in recent years, such as the new Tariff Adjustment Plan implemented in 2022 that adjusts the commodity classification of soybeans. The new adjustment deletes subheading 1201.9010, but adds non-GMO soybean subheading 1201.9011 and other soybean subheading 1201.9019. That is, from the perspective of customs supervision, imported soybeans have been essentially divided into GMO and non-GMO, and different supervision and regulatory measures are applied. The following is a brief introduction to the import process of non-transgenic soybeans.

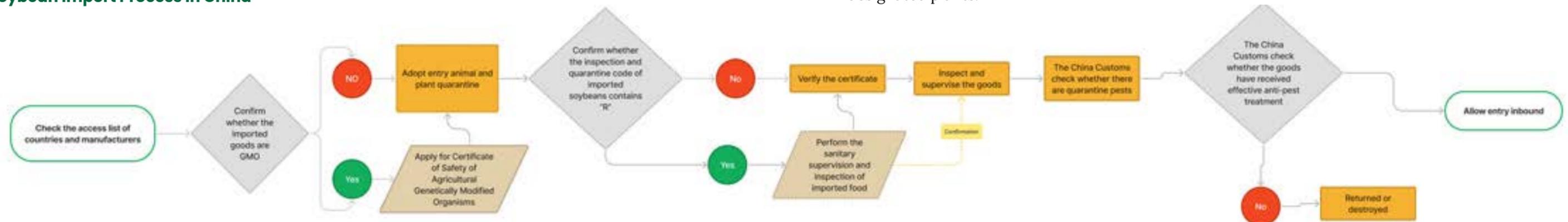
## MAIN PROCEDURES FOR NON-TRANSGENIC SOYBEANS IMPORTS

Soybean belongs to Chapter 12 of the Customs Import and Export Tariffs. There are five subheadings under tariff item 12.01: 1201.1000 seeds, 1201.9011 non-GMO yellow soybeans, 1201.9010 other yellow soybeans, 1201.9020 black soybeans and 1201.9030 green soybeans. Using yellow soybeans as an example, the Most Favoured Nation (MFN) import tariff is 3%, the general tariff is 180%, and the value-added tax is 9%. The import process follows.

### Check the Access List of Countries and Manufacturers

Offshore production, processing and storage enterprises need to check the relevant regulations of the access countries and manufacturers for grain imports. China customs implements the registration system for offshore enterprises and requires them to meet the mandatory standards of relevant laws and regulations.

### Soybean Import Process in China



### Confirm Identity of Imported Commodity

China adopts strict standards for identification of GMO products. Any animals, plants, microorganisms or their products which modify genome composition with genetic engineering technology and are used in agricultural production or agricultural product processing are GMOs. Provided the agricultural products contain GMO components, importers or exporters shall apply for Certificate of Safety of Agricultural Genetically Modified Organisms and relevant approval documents to handle the relevant procedures.

### Sanitary Supervision and Inspection

If required by the inspection and quarantine code, the importer shall perform the sanitary supervision and inspection formalities of imported foods. The detailed procedures follow.

- Recordation of the importer.
- Recordation of the overseas exporters or exporter's agents.

### Quarantine Approval

Before signing the trade contract, soybean importers apply for the Entering Animal and Plant Quarantine License. The documents needed for inspection application are: the Certificate of Plant Quarantine issued by the competent authority of the grain exporting country or region; the Certificate of Origin; trade documents, such as a trade contract, bill of lading, packing list and invoice, etc.; bilateral agreements; protocols; memos and other documents stipulated by general customs.

Soybeans exported to China shall be inspected and quarantined in the regulatory places designated, and produced and processed in the designated plants.



### Apply for Inspection and Quarantine

The importer or its agent of food import must, in accordance with the provisions, submit the following documents to the inspection and quarantine agency at the place of customs clearance: contract, invoice, packing list, bill of lading and other necessary documents, relevant approval documents, the official required quarantine or hygiene certificate of the exporting country or region, bilateral agreements, protocols and other provisions, label proofs and translation copies of imported food. If importing prepackaged foods for the first time, the permit certificate issued by the public health administrative department of the state council should be included. If importing non-national-safety-standard food for the first time, the importer should provide other required certificates or supporting documents for importing foods.

- Application examined and accepted by inspection and quarantine agency.
- Inspection and quarantine agency billing and charging.
- Issuing customs clearance form.
- Documents transferred to the inspection implementation department.
- Inspection and sampling. The importer or its agent shall contact the relevant offices of the inspection implementation department to execute the inspection requirements and conduct sampling as needed within 20 days after customs clearance.
- Implementation of inspection and recordation of labels. The inspection and quarantine agency has to implement inspection in accordance with laws, regulations and standards, including sensory inspection, laboratory inspection, label inspection, etc.
- Evaluation of inspection results and issuing certificate. If the imported food is qualified by inspection and quarantine, the inspection and quarantine agency shall issue the qualified Certificate of Inspection and Quarantine to approve for sale and use. If the imported food is unqualified, the inspection and quarantine agency shall issue the certificate of unqualified. If the unqualified matters involve safety, health and environmental protection items, the inspection and quarantine agency will order the parties to destroy and supervise, or issue a notice of return process, which should be handled by the importers. In the case of return processing, the party concerned shall provide the supporting materials to prove the goods have been returned outbound thereafter, including the Customs Declaration of Return, Writing-off Form of Export Tax Refund, etc. In the case of destruction, the party concerned shall conduct harmless treatment of the goods and provide relevant materials under the supervision of the entry and exit inspection and quarantine agency, and shall not dispose of the goods without the consent of the inspection and quarantine agency. In the case of technical treatment, the Certificate of Conformity shall be provided after re-inspection.
- The record system of food import and sales.

### Verification of Certificate

- Check the Entering Animal and Plant Quarantine License for imported soybeans.
- Check whether importing soybeans come from a registered enterprise.
- Check the authenticity and validity of the quarantine certificate.



### Goods Inspection and Supervision

Goods qualified by the inspection and quarantine would be approved to enter. The process of loading, unloading, transportation, storage and processing should be under the supervision of China Customs, in accordance with the relevant requirements for plant quarantine of China. Without processing, the goods are not allowed to access the market directly and are strictly prohibited to be used as seeds.

### Handling Non-Conformity

If China Customs finds pests in quarantine, entry inbound would be allowed after effective anti-pest treatment. The goods shall be returned or destroyed if there is no effective treatment.

### Quarantine Transference

In respect to the import of animals and plants, their products or other quarantine objects that need to be transferred away from a customs surveillance zone for quarantine inspection, customs shall, after verification, release the same on the strength of the Quarantine Transference Notice issued by the port animal and plant quarantine office.

### Post-Import Risk Monitoring and Early Warning

The General Administration of Customs implements a monitoring system for potential epidemic situations from imported and exported grain. It carries out the monitoring and investigation of quarantine organisms, such as weeds, in the areas around grain entry ports, warehouses, processing enterprises, grain exchange and loading along the transportation line, etc.

### Corresponding Responsibilities of Soybean Processors

#### Submit a Designate Application

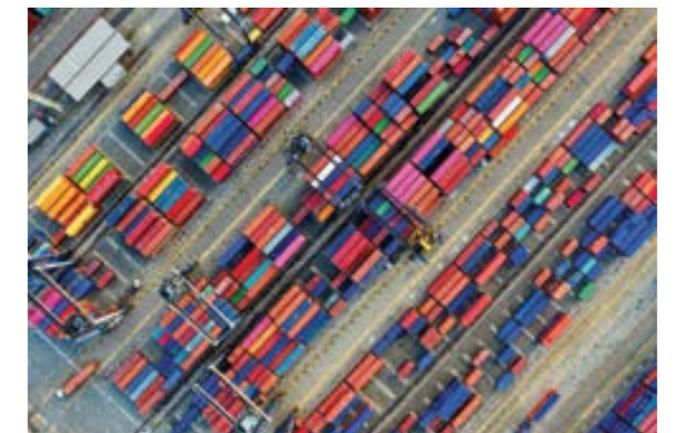
Enterprises planning to store and process imported grain may submit a designate application to local customs if they meet the corresponding requirements.

#### Accept Quarantine Supervision

China Customs requires enterprises, consignees and their agents to report to local customs immediately when they find major epidemic situations or public health problems. Customs shall handle and report the case in accordance with the provisions.

#### Keep Safety Control Records

The consignee and consignor of import and export grain and the production, processing, storage and transportation enterprises must establish corresponding production and operation files, and do a good job in quality trace and safety control.



## CLEARANCE FORMALITIES, TRANSPORTATION AND TECHNICAL CHALLENGES

### CLEARANCE FORMALITIES OF IMPORTED SOYBEANS

China became a net importer of soybeans in 1996. In 2001, the country published and enforced Regulations on the Safety Management of Agricultural Genetically Modified Organisms. In 2022, China customs revised the HS code for imported non-GMO soybean from imported GMO soybean. In general, the importation of soybeans is of the most complicated formalities, and it involves many complications in qualification, permits, documents and pricing manner.

#### Formalities

Imported soybeans have to go through links including importation clearance, customs inspection, lab tests or sampling, appropriation to end user, appropriation write-off and foreign exchange write-off.

With the mode of container shipment, importation clearance can be launched in advance to cargo arrival, which is allowed once the container liner vessel has forecast its arrival to the destination port and manifest information is available. Documents to be submitted for the clearance include trade contract, bill of lading, commercial invoice, packing list, certificate of origin and phytosanitary certificate. At the same time, a CIQ permit is required, which states the name of the end user to process the cargo. Subsequent appropriation and write off links should be in compliance with CIQ permit. An auto-importation permit is also required, which is to be applied for on the China Ministry of Commerce website after the vessel departs the loading port and the bill of lading information is available.

For GMO soybeans, an additional permit, a GMO import permit, also needs to be obtained in advance, which is to be applied for from the Chinese Ministry of Agriculture and Rural Affairs (CMARA). The GMO import permit bears information of the exporter or trade contract seller, importer or trade contract buyer, the end user and approved GMO traits.

Under shipping documents, trade contracts usually provide a series of other documents to be presented, including a quality certificate, weight certificate, container cleanliness certificate and chemical residue certificate. These documents are provided per agreements between sellers and buyers, aimed at specifying the quality, weight, load status of cargo, etc., and they are not required to be submitted to China Customs.

Currently all clearance links have become electronic, and all hard copies only need to be filed and preserved for possible checks.



All cargo must go through customs inspection, which is usually carried out in the manner of opening the sampled container and checking if containers and seals are sound and in compliance with the bill of lading, and checking the packing status, shipping mark, appearance and general physical properties of the cargo.

Laboratory tests are given to randomly chosen shipments. For each chosen shipment, usually five to six containers need to be hoisted to the lab test yard for sampling and testing of cargo. In the past, the number of sampled containers was determined by the number of containers of the whole shipment in proportion, for example one out of every five. After the customs system went electronic, the number of sampled containers became random as well, but usually is no less than five. The lab will make a composite sample of cargo based on all sampled containers and the test will focus on mycotoxins, disease and insect pests, chemical residue, heavy metals, GMO traits or if GMO contaminant could be detected, for non-GMO soybeans, and so on. Note that per the lab test manual, over 400 parameters could be tested, which are unrealistic to be performed in full. Customs will also set up tags according to demand and specific circumstance, to focus on detecting specific objectives or on specific origins or commodities.

Lab tests are time-consuming because they involve culturing mycotoxins and detecting trace amounts of chemicals. In some ports, dispatch fees can be paid to expedite the process.

After customs inspection and lab tests, the cargo is allowed to be shipped out. As per the CIQ permit submitted in clearance, Customs will allow the cargo to be trucked out of container yards and delivered to end users. After containers are discharged to the end user, they are returned empty to the yard. After the cargo is fully processed or consumed, the end user needs to apply for write-off of the quantity to customs, so that end user's warehouse capacity can be released for application of a new CIQ permit.

If the cargo is cleared based on provisional price, importers need to do a second clearance after the final price is fixed, providing proof documents of the pricing of cargo and balancing out foreign exchange.



**Permits and Documents**

Permits required for imported soybeans involve phytosanitary certificates first. The origin country and China need to sign phytosanitary protocol for soybean exports to China at the beginning of the trade relationship. According to the protocol, the origin country needs to do quality control over the exported soybeans to make sure that disease and insect pests as regulated in the protocol are not contained in the cargo. That guarantee and statement are made by the plant protection organization of the origin country in the form of a phytosanitary certificate.

The importer in China needs to provide end user’s qualification to process imported soybeans and warehouse capacity. The importer also has to apply for a China Entry-Exit Inspection and Quarantine Permit, or a CIQ permit, toward destination port customs. This must be submitted when importation clearance is filed. After cargo is loaded on ship in the origin country, the importer also needs to apply for an Auto-Importation Permit from the Chinese Ministry of Commerce as per the bill of lading information. The Auto-Importation Permit is for general filing purposes of imported commodities and is rarely used as control means. If imported soybeans are GMO, a GMO Import Permit needs to be granted in advance by CMARA. The GMO Import Permit is also applicable to imported GMO corn and cottonseed, etc.

It is worth mentioning that no imperative or official non-GMO certificate is required to be submitted for imported non-GMO soybeans. For those countries in which both GMO soybeans and non-GMO soybeans are planted, like the U.S. and Canada, exporters will designate a third-party laboratory to test the cargo and issue a certificate when they export non-GMO soybeans to China. However, for those countries in which no GMO soybeans are planted, like Russia and Ethiopia, there is no need to hire a laboratory to issue a non-GMO certificate. At the most, a declaration stating that no GMO soybeans are planted in the country, issued by the exporter or commerce organization, should suffice.

In terms of shipping documents, the buyer and seller in the trade contract will regulate the series of shipping documents to be presented, such as a quality certificate and a weight certificate, so as to prove the quantity, quality and load condition of the cargo. These shipping documents are not imperatively required in importation clearance. The essential documents required to clear imports are the certificate of origin, phytosanitary certificate, bill of lading, packing list and trade contract.

**Inspections and Tests**

As mentioned above, customs inspection will primarily check if containers and seals are sound, if their numbers conform to the bill of lading, package of cargo, shipping mark, cargo appearance and general physical properties. For imported non-GMO soybeans, there is no absolute requirement on appearance. For a long time in the past, Chinese importers and end users misunderstood that all black-hilum soybeans were GMO soybeans, mainly because almost all U.S. and Brazilian GMO soybeans have black hilums, and those Canadian non-GMO soybeans which entered China earlier than other origins had white hilums. This misunderstanding is dissolving as more and more black-hilum non-GMO soybean varieties become visible to Chinese importers and end users. In other words, the recognition of non-GMO soybeans rely on the lab test results.

For a long time, China has been adopting a zero-tolerance principle to GMO content. Customs laboratories use the PCR method to test GMO content and can detect very minimal GMO contamination.



**TRANSPORTATION MEANS FOR IMPORTED SOYBEANS**

Due to the existence of appropriation supervision by customs, after imported soybeans go through customs inspection and lab tests in accordance with the CIQ permit submitted in clearance, appropriation procedures will be launched. The soybeans have to be shipped to the end user in whole and by closed means.

For container shipments, after customs inspection and lab tests are done, those containers opened for inspection and testing purposes have to be sealed again. All containers have to be shipped to the end user and discharged in it, and then returned empty after discharge.

For bulk vessel shipments, after customs inspection, the cargo must be discharged into a port warehouse under customs supervision. After the lab test greenlight is given, the cargo must be shipped to the end user by registered trucks. In principle, cargo shall not be directly evacuated from the vessel rail to the end user, and cargo may not be released from the port warehouse before lab tests confirm contents.

However, exceptional cases happen occasionally or even repeatedly. Thus, many trading lots can be seen on the market, as discussed in detail below.



## TECHNICAL DIFFICULTIES IN CLEARING IMPORTED SOYBEANS

This discussion covers two technical difficulties of imported non-GMO soybeans, non-GMO purity and appropriation supervision.

As mentioned above, non-GMO soybeans can be divided into qualitative non-GMO soybeans, where the origin country does not plant any GMO soybeans so shipments are theoretically 100% pure, and quantitative non-GMO soybeans, where the origin country plants both GMO soybeans and non-GMO soybeans, and non-GMO soybeans are defined as per non-GMO purity.

For those qualitative origin countries, lab tests are not required to prove the product is non-GMO. They do need to issue a declaration stating that no GMO soybeans are planted in the country.

However, for quantitative origin countries, it is a must to issue a non-GMO certificate by means of lab tests. One testing method is to set up a threshold and when the detected GMO content is lower than the threshold, the sample and the parcel of cargo is considered non-GMO. This is called a qualitative non-GMO certificate. The other test method is to set up a threshold also and to determine the GMO content by quantitative means. When the detected GMO content is lower than preset threshold, such content is listed, and the sample and the parcel of cargo is concluded as non-GMO. This is called a quantitative non-GMO certificate.

It is obvious that the quantitative non-GMO certificate does not fit the zero-tolerance principle of Chinese Customs. Submitting a quantitative non-GMO certificate to Chinese Customs, although this certificate is not required in importation clearance, is no different from pleading guilty. So, in addition to the GMO contamination control in origin, a decent non-GMO certificate, in particular, a decent qualitative non-GMO certificate, helps to clear the cargo smoothly.

Due to the existence of appropriation supervision, imported soybeans have to be shipped to the end user as stated in CIQ permit after clearance. In this mode, there is no chance to trade the cargo to a third party. Then how is trading of imported non-GMO soybeans realized?

One way is for importers to do trading before clearance or sign forward sale contracts. An importer can buy first and lock down the price and shipment period, and after the shipment is specified, the importer can sign an importation agency contract or forward sale contract with the end user.

A second way is appropriation laundry. In short, a contract is signed between the importer and end user, but the cargo is not actually delivered to the end user. Instead, some expense will be paid to the end user.

In a third way, end users illegally sell the cargo to the market. For example, a food factory buys a parcel of imported non-GMO soybeans and sells the raw material to the market so as to make profit, instead of processing or consuming the soybeans itself.

Finally, there are special end users, such as some bio-activity eliminating facilities in Shandong Province, and a couple of warehouses in Tianjin. These facilities do not produce soybean products but eliminate bioactivity of soybeans or break soybeans into powder instead. Of course, such processing may get shallow sometimes. Appropriation supervision terminates at such facilities and those imported non-GMO soybeans released from these special end users can go to the market.



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# Indonesia

## SOY FOODS REPORT



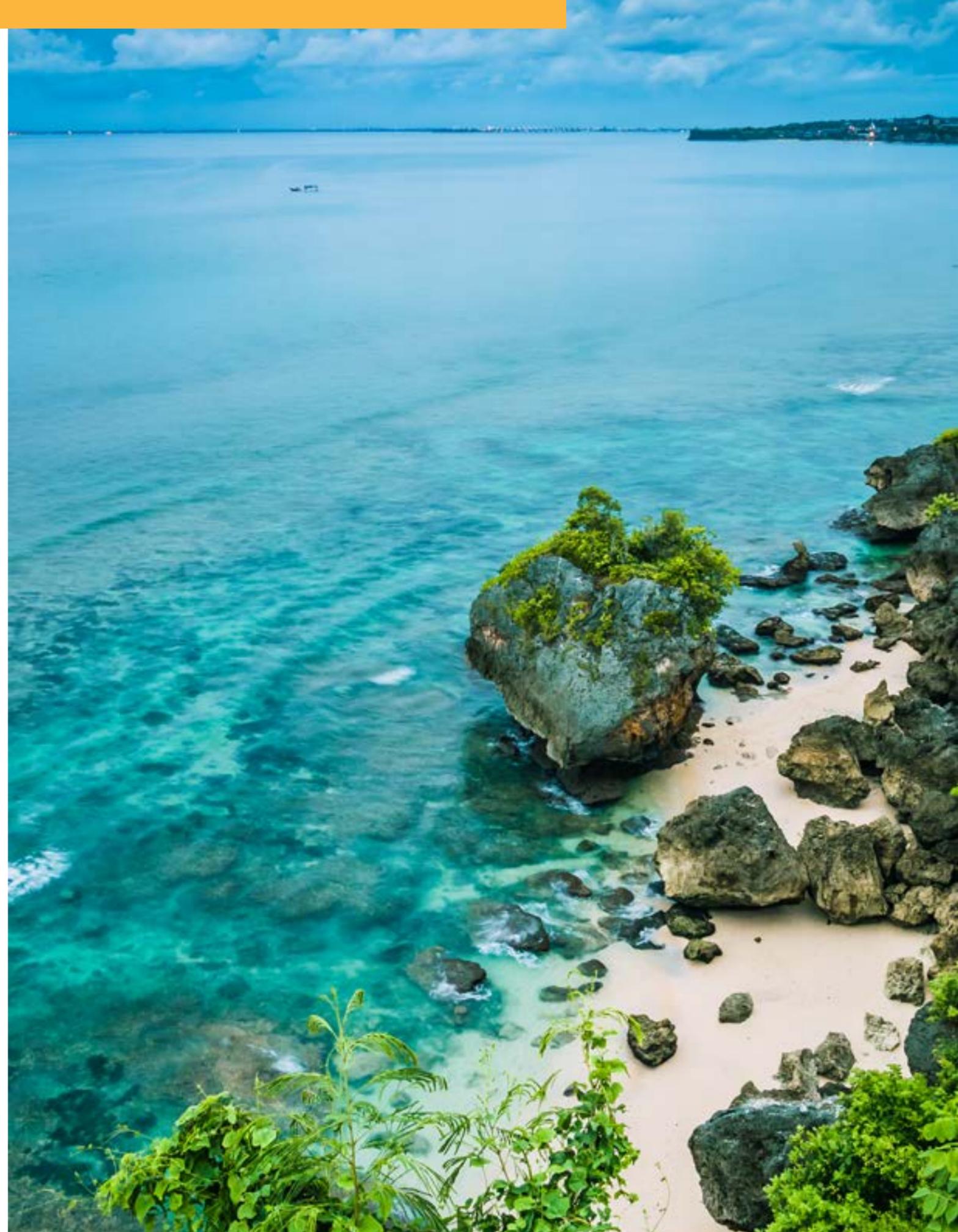
# Indonesia

Soy food and beverage products have always been a significant part of the Indonesian diet and culinary heritage. Tofu was introduced by the Chinese to Indonesia in the 10th century,<sup>1</sup> while tempeh originated in Java and may have existed as early as the 1600s, according to the historical document *Serat Centini*.<sup>2</sup>

Both tofu and tempeh continue to be popular among Indonesians, with annual per capita consumption of tofu and tempeh in 2023 at 2.8 kilograms (6.2 pounds) and 3.7 kg (8.2 pounds), respectively.<sup>3</sup> Other popularly consumed soy food products include soy sauces like sweet soy sauce, or *kecap manis*, and salty soy sauce, or *kecap asin*, soy drinks and plant-based meat.



A typical Indonesian meal with tofu and tempeh as the protein source  
Source: IDN Times

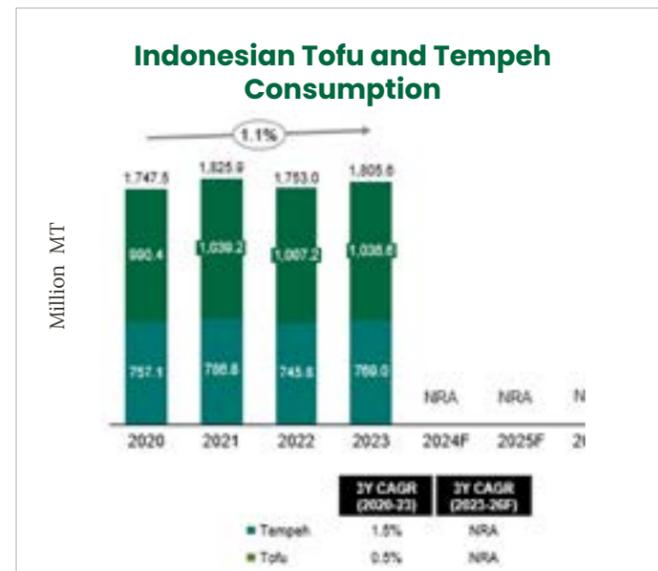




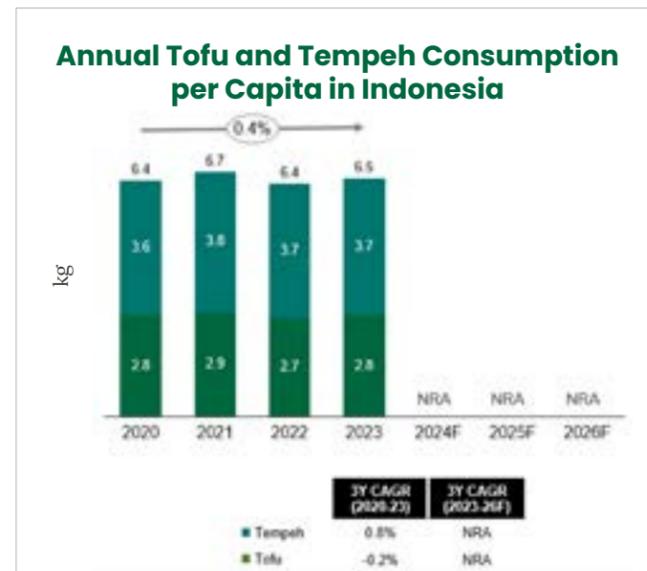
# Consumption

## TOFU AND TEMPEH

Total consumption volume of tofu-related foods and tempeh is very large in Indonesia and continues to grow, reflecting the importance of soy as a staple source of protein and the enduring popularity of these foods. In 2023, Indonesia consumed 1.8 billion metric tons of tofu and tempeh, demonstrating a three-year compound annual growth rate of 1.1% from 2020 to 2023 despite the pandemic.<sup>4</sup>



Source: Statistics of Food Consumption, Indonesia Ministry of Agriculture, 2023



Source: Statistics of Food Consumption, Indonesia Ministry of Agriculture, 2023

Although Indonesia's income per capita is growing and more people can afford animal protein, tofu and tempeh continue to hold their place as main protein sources. Indonesians are more sensitive to price increases of meat than price increases of tofu and tempeh. These soy foods are the most price inelastic protein commodity in Indonesia for the poorest households.<sup>5</sup>

In Indonesia in 2023, tofu's per capita consumption was 2.8 kg (6.2 pounds) and tempeh's was 3.7 kg (8.2 pounds), a total of 6.5 kg (14.3 pounds).<sup>6</sup> Indonesia's combined tofu and tempeh consumption per capita was much higher compared to its neighbors Malaysia and Singapore, at just 2.8 kg (6.2 pounds) and 4.4 kg (9.7 pounds) per capita, respectively.<sup>7</sup>

Overall, per capita tofu and tempeh consumption grew at the compound annual growth rate of 0.4% between 2020 and 2023. Tofu consumption per capita fell slightly between 2020 and 2023 due to rising price of soybeans,<sup>8</sup> causing smaller production and less availability, rather than changing dietary preference. Per capita consumption of tempeh in Indonesia saw a modest increase, with a compound annual growth rate of 0.8% during the same period, despite challenges in soybean supplies.<sup>9</sup>

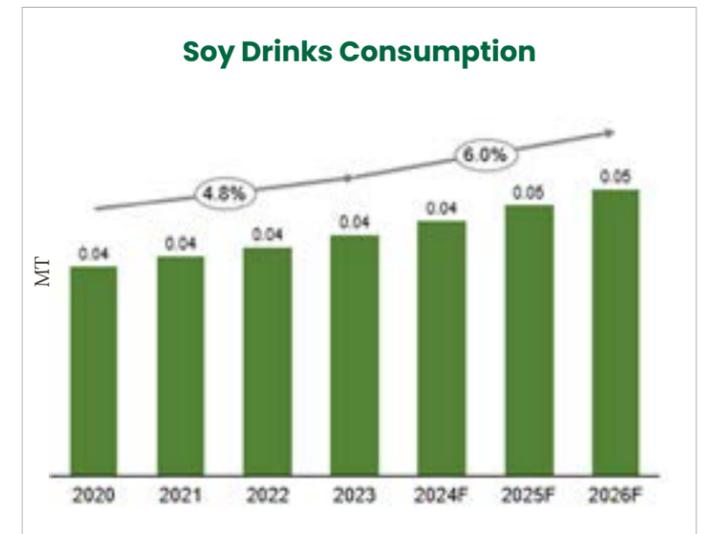


## SOY DRINKS

Soy drinks are also popular and demand is growing in Indonesia, though the consumption volume is not as high as tofu-related foods. Soy drinks were first introduced in Southeast Asia after World War II. Therefore, it is a familiar snack beverage in Indonesia.<sup>10</sup>

In 2023, Indonesia consumed 40,000 MT of soy drinks, which increased at a compound annual growth rate of 4.8% between 2020 and 2023, despite the pandemic. Soy drink consumption is predicted to continue growing at a three-year compound annual growth rate of 6.0% between 2023 and 2026.<sup>11</sup>

Despite its growing demand and ubiquitous presence in Indonesia, soy drink consumption is lower compared to regional peers, at 0.4 liters (13.5 ounces) per capita annually, demonstrating significant room for growth in this product segment.<sup>12</sup>



Source: Euromonitor, 2024

## PLANT-BASED MEAT

While plant-based meat is not a new product category in Indonesia, as imitation meat has long been available for vegetarian consumers, it is only recently that plant-based meat has been gaining mainstream presence. As flexitarian diets and health-conscious trends become more common, the consumption of plant-based meat is forecasted to grow. By some estimates, the plant-based meat category grew from \$109.5 million in 2020 to \$628.6 million in 2022.<sup>13</sup>

However, industry experts do note challenges in incorporating more plant-based meat to Indonesians' daily diet: the enduring presence of staple foods such as tofu and tempeh, and the reluctance of restaurants and chefs to add plant-based foods into their menus.<sup>14</sup> Chain restaurants such as Burger King have started introducing plant-based meat in the menu, such as the soy-based Whopper in 2021,<sup>15</sup> which is exposing the product to a wider audience.



## SUSTAINABLE FOOD TRENDS

Soy food and beverage products are considered more sustainable protein sources than meat because meat requires livestock that contributes to 18% of Indonesia's greenhouse gas emissions.<sup>16</sup> According to a survey by Rakuten, 13% of Indonesians have reduced their animal meat consumption, 26% have chosen organically or sustainably produced food items and 19% have chosen to consume from brands who have environmentally sustainable practices and values.<sup>17</sup>

Although these consumer trends still have a huge potential to grow, some foods producers have already started taking environmental sustainability into consideration. Meatless Kingdom, an Indonesian producer of plant-based meats, considers factors such as the carbon footprint of raw material transportation in its operations. Their manufacturing facility is strategically located in West Java to be close to raw materials such as mushrooms, which makes up a significant proportion of their ingredients, along with soybeans. Their products also use 80% less water and produce 80 to 85% less carbon dioxide than local meat production.<sup>18</sup> This indicates the importance of sustainability in their business model, which could present opportunities for sourcing sustainable soy in the future.



Plant-based Whopper advertised in Indonesia, using soy-based patties  
Source: Burger King Indonesia



# Soy Foods and Beverages Production



## TOFU AND TEMPEH

The tofu and tempeh production industry is very fragmented in Indonesia, with two types of producers: small-medium enterprises — called artisans or *pengrajin* that belong under cooperatives — and industrial manufacturers. According to the Association of Indonesian Tofu Tempeh Cooperatives, 160,000 tofu and tempeh artisan producers spread across 27 provinces employed around 5 million people in 2020.<sup>19</sup> Almost all of them are family-owned businesses that distribute their products in traditional markets.

On the other end of the spectrum, industrial manufacturers such as Kong Kee, Yun-Yi and Sakake distribute their products in modern supermarkets. According to Euromonitor, Kong Kee produces egg, silken and Japanese tofu that makes up 10% of the retail market. The other two brands, Yun-Yi and Sakake, make up 9.4% and 8.4% of Indonesia’s retail market share respectively. All these brands are produced domestically.

Despite the size of the tofu and tempeh industry in Indonesia and flourishing demand, the production outlook dimmed in recent years due to escalating soybean prices. From 2021 to 2022, soybean prices increased by 24.8%,<sup>20</sup> which caused a drop in production by small-medium enterprises, even pushing frustrated producers to strikes.<sup>21</sup> On the upside, global soybean prices are projected to fall further, especially for marketing year 2024/25, when the U.S. soybean supply is expected to increase by 8% year-over-year due to higher carryover stocks and yields.<sup>22</sup> With stabilizing prices, tofu and tempeh production are expected to rebound from the recent drop.



Tempeh production using banana leaves  
Source: ANTARA Foto



Kong Kee’s Egg Tofu Special  
Source: Kong Kee Indonesia

Domestically in Indonesia, opportunities for growth in tempeh production still exist because some pockets of the country still lack reliable supply. For instance, as tempeh production is very concentrated in Java, tempeh consumption in Sulawesi is much lower due to lack of access.<sup>23</sup> To address that, USSEC and Rumah Tempe, an Indonesian tempeh producer, collaborated to build a production facility in Sulawesi to increase the production and consumption of tempeh and promote U.S. Soy imports.



## SOY DRINKS

Similar to the tofu and tempeh production industry, soy drink production in Indonesia is highly fragmented. There are two types of manufacturers in Indonesia: small-medium enterprises and industrial manufacturers. Soy drinks by small-medium producers — considered semi-processed in the food and beverage industry — dominate at 76% of the market volume in 2019.<sup>24</sup>

In terms of industrial manufacturers, both multinational corporations and domestic manufacturers participate in the soy drink industry in Indonesia. Kraft’s ABC Heinz, a multi-national corporation, is the largest soy drink company based on retail market share, taking up 29.9% of the market.<sup>25</sup> In addition to original plain soy milk, the company also produces flavored soy milk such as strawberry and chocolate. In 2023, Kraft Heinz announced an investment of \$84 million in their Indonesian production facility, with plans to expand soy processing and into the plant-based market.<sup>26</sup> This move would increase yearly production capacity by 174%.

Another top soy drink brand in Indonesia is Mony Joy Soy, which makes up 23.1% of the market.<sup>27</sup> Mony Joy Soy is a brand under Monysaga Prima, a local company that manufactures food and beverage products with a manufacturing plant in West Java.



ABC’s soy milk in 1 liter packaging  
Source: Heinz ABC Indonesia

## PLANT-BASED MEAT

While plant-based proteins like tofu and tempeh are ubiquitous in Indonesia, plant-based meat is less common. It is only starting to gain mainstream presence the supermarkets.<sup>28</sup> However, plant-based meat production is growing, led by local startups such as Green Rebel Food and Meatless Kingdom. Both brands provide localized plant-based meat dishes such as rendang, satay and dendeng. Indonesian plant-based meat startups are also expanding overseas. For instance, Green Rebel is expanding to Singapore, Malaysia, South Korea, Vietnam and the Philippines.<sup>29</sup>



Beefless Rendang from Green Rebel Food  
Source: Green Rebel Food



Dendeng Pedas from Meatless Kingdom  
Source: Blibli

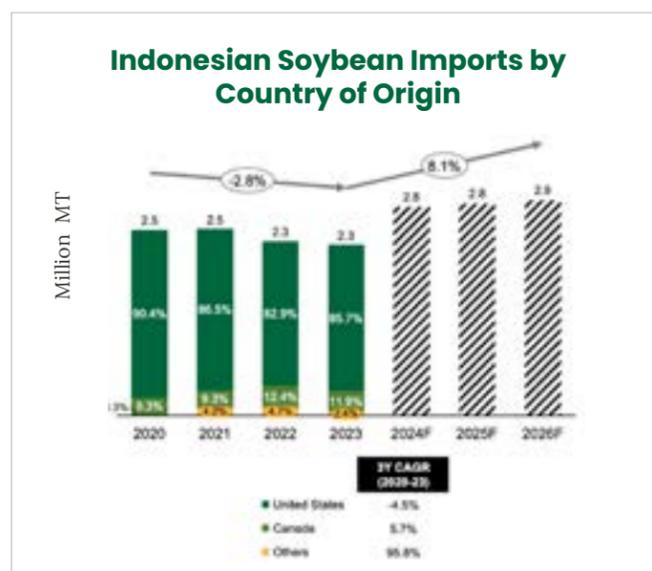




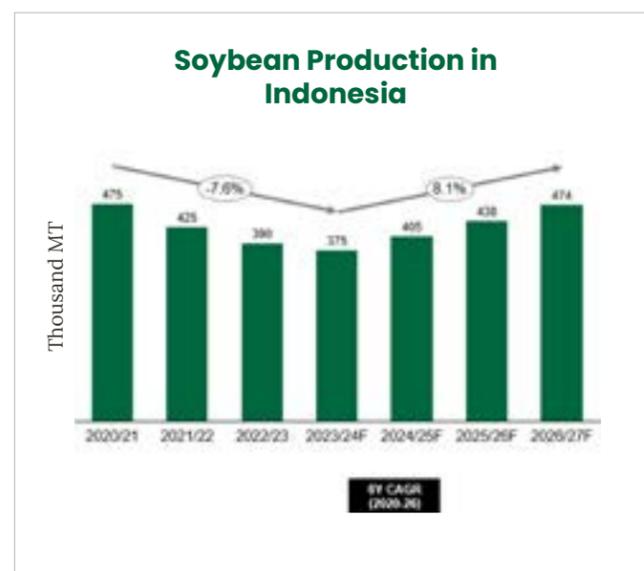
# Soy Supply Chain

## SOYBEAN SUPPLY: IMPORT AND LOCAL PRODUCTION

Soybean supply in Indonesia is dominated by imports, as domestic production cannot meet the total soybean demand. In 2023, Indonesia imported 2.3 million metric tons of soybeans, of which 85.7% came from the United States. Soybean imports into Indonesia dropped 2.8% between 2020 and 2023. U.S. imports saw a similar trend, with U.S. Soy volume falling 4.5% between 2020 and 2023, and its market share falling from 90.4% in 2020 to 85.7% in 2023.<sup>30</sup> However, the U.S. still remains Indonesia's top soybean supplier. This downward trend is attributed to high prices of soybean imports.<sup>31</sup> Despite falling imports in recent years, the Organisation for Economic Co-operation and Development (OECD) predicts soybean imports to grow 8.1% between 2023 and 2026 to 2.9 million MT.<sup>32</sup>



Sources: GTA and OECD



Source: USDA and Y&S analysis

In the 2023/24 market year, Indonesia expected to produce 375,000 MT of soybeans. This figure is down from 475,000 MT in 2020/21, a three-year compound annual growth rate of -7.6% from 2020/21 to 2023/24.<sup>33</sup> This was due to a lack of land dedicated to soybean cultivation, because growing other crops like maize is more profitable.<sup>34</sup> However, local production is expected to increase 8.1% from 2023/24 to 2026/27, to 474,000 MT, as growers become more motivated to produce soybeans because of increasing prices and demand.<sup>35</sup> Despite the increased production, it is notable that soybean yield in Indonesia is only half of that of the U.S., at 1.2 MT per hectare (18 bushels per acre).<sup>36</sup>

Soybean planting season in Indonesia is between October and December, with harvest happening in February to April. Soybean production in Indonesia is concentrated in Java, with East Java accounting for 38% of domestic production, followed by Central and West Java at 13% and 10% respectively. The largest producing region outside of Java is West Nusa Tenggara, producing 12% of domestic soybeans.<sup>37</sup>



## SUPPLY CHAIN AND LOGISTICS

### LOGISTICS AND TRANSPORTATION

Soybean imports arrive in Indonesia by sea, either via bulk vessels or containers. Bulk vessels have a capacity of around 100,000 MT and only one importer uses this type of vessel. Other importers transport soybeans via containers, which range from 2,000 to 10,000 MT.

Tanjung Perak, Cigading, Cilacap, Banyuwangi and Belawan are deep sea ports that are able to accommodate bulk vessels. Tanjung Perak and Cigading also have discharging facilities. The ports of Tanjung Priok, Pontianak and Tanjung Emas mostly receive container shipments of soybeans. The distribution of imported food-grade soybeans throughout Indonesia depends on the concentration of tofu and tempeh producers, of which almost 80% are based in Java.<sup>38</sup>

Soybean Import Volume by Indonesian Port

Island	Port	City	Import Volume (Thousand MT)   2023
Java	Tanjung Perak	Surabaya	700.1
	Tanjung Emas	Semarang	418.6
	Cigading	Cilegon	386.7
	Tanjung Priok	Jakarta	332.4
	Cilacap	Cilacap	62.6
	Banyuwangi	Banyuwangi	49.0
	Other	-	6.6
Sumatra	Belawan	Medan	188.6
	Panjang	Bandar Lampung	149.1
Kalimantan	Pontianak	Pontianak	7.2

Source: Indonesia's National Statistical Agency and USSEC Indonesia



### SUPPLY CHAIN

Indonesia highly prefers Grade 1 yellow soybean (YSB#1), and as of 2022, 92% of U.S. soybean exports to Indonesia are YSB#1.<sup>39</sup> Once imported soybeans reach Indonesia's ports, the shipments will go through quarantine and customs inspection processes that usually take three days, excluding the amount of time required for bulk vessels to discharge their soybeans. Upon port discharge, soybeans are stored at the importer's warehouse and U.S. soybeans usually go through importers and distributors before reaching the end users.

Importers play an important role in Indonesia, as they also clean soybeans before selling them to distributors. While most importers apply the first-in-first-out principle in storage and distribution, it is important to note that importers' storage facilities vary and they might not have silos. Instead, the soybeans may be piled on a warehouse floor and arranged from oldest to newest shipment. The Soybean Handling chart illustrates the handling and cleaning process for Grade 1 and 2 yellow soybean (YSB#1 and YSB#2). Upon cleaning by importers, distributors will collect the soybeans in their own trucks for storage in their warehouses, before distributing to customers such as large manufacturers, small-medium enterprises and tempeh and tofu cooperatives.





Source: USSEC Indonesia country representative and Y&S



Source: USSEC Indonesia and industry experts





# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

Indonesia does not impose tariffs on soybean imports. However, Indonesia enforces an Import Income Tax, or Pajak Penghasilan Impor, of 2.5% on soybean import earnings.

Soybean imports require phytosanitary certificates in accordance with the International Plant Protection Convention, as soybeans are considered possible vectors of disease.<sup>40</sup> Additionally, soybean imports may have to undergo fumigation in events where insects and larvae are found during the quarantine period. However, this occurrence is not common. For example, out of 2.4 million MT of soybean imports, less than 0.5% are subject to fumigation.<sup>41</sup>

As for inspections, soybean imports are subject to pre-shipment inspection prior to departure from the port of origin. The inspections involve obtaining a surveyor report that will allow the soybean cargo to be released for transport into Indonesia.<sup>42</sup>

## NUTRITIONAL LABELING

Nutritional labeling is regulated by Badan Pengawas Obat dan Makanan or BPOM.<sup>43</sup> Nutritional content has to be stated on the product label in accordance with the Nutritional Value Information formatting in a table, with the following information.

1. Serving measures
2. Number of servings per package

3. Type and amount of nutrient content, including total energy, total fat, saturated fat, protein, total carbohydrates, sugar and salt
4. Type and amount of non-nutritional substances
5. Recommended nutritional adequacy rate

Nutritional labeling applies to all food products except tea bags, coffee and tea powder, drinking water, herbs, spices, seasoning and condiments.<sup>44</sup>

Allergens have to be labeled on all food products that include or are processed in facilities that use such ingredients. Allergen ingredients must be included in the ingredient list and printed in bold as “*Mengandung alergen, lihat daftar bahan yang dicetak tebal,*” or “Contains allergens, see list of ingredients in bold print.” Allergens include gluten, eggs, aquatic products, peanuts, soybeans, milk, nuts and products with at least 10 mg per kg of sulfite content.



Nutritional label on V-soy glass bottle. Source: Lulu Hypermart



## GENETICALLY MODIFIED VS. NON-GENETICALLY MODIFIED SOYBEANS

Genetically modified (GM) food in Indonesia is regulated by Indonesia’s Food and Drugs Authority (BPOM). It must be assessed by the Commission of Biological Genetically Modified Product Safety and approved by BPOM prior to distribution, whether it is domestically produced or imported.<sup>45</sup> For food products that are required to obtain a distribution permit, or *Izin Edar*, there is an additional | labeling requirement if the product contains GM ingredients.<sup>46</sup>

GM soybeans used for food are approved for use in Indonesia. So far, 14 types of GM soybeans grown in the U.S. have been authorized for direct use and processing.<sup>47</sup> In 2022, the Indonesian government started encouraging farmers to adopt the use of GM soybeans to improve domestic production and reduce dependence on soybean imports.

While GM labeling is required for mass-produced food products that are mandated to have a distribution permit, such as soy milk produced by Kraft’s ABC Heinz, most soy food and beverage products in Indonesia are manufactured by small-medium enterprises that are exempt from distribution permits. In reality, most soy food and beverage products in Indonesia do not need to disclose GM labeling, and the distinction between

GM and non-GM soybeans is not an issue.<sup>48</sup> In fact, GM soybeans are highly preferred in Indonesia, where customers are price-conscious and expect high-quality soybeans. Most of the U.S. soybeans in Indonesia are GM soybeans.

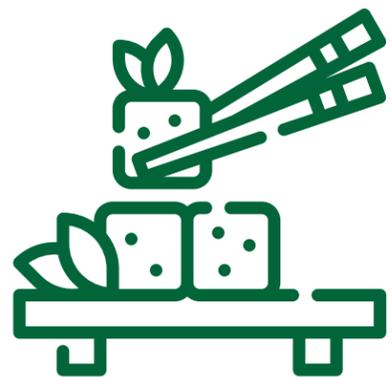
However, for mass manufacturers such as Kraft’s ABC Heinz that need a distribution permit for their products, GM labeling is required and therefore they may prefer non-GM soybeans. Kraft’s ABC Heinz, for instance, imports non-GM soybeans for its soy milk. The non-GM soybeans come in 25-kg (55-pound) paper bags and do not require cleaning, unlike most GM soybeans imported to Indonesia.



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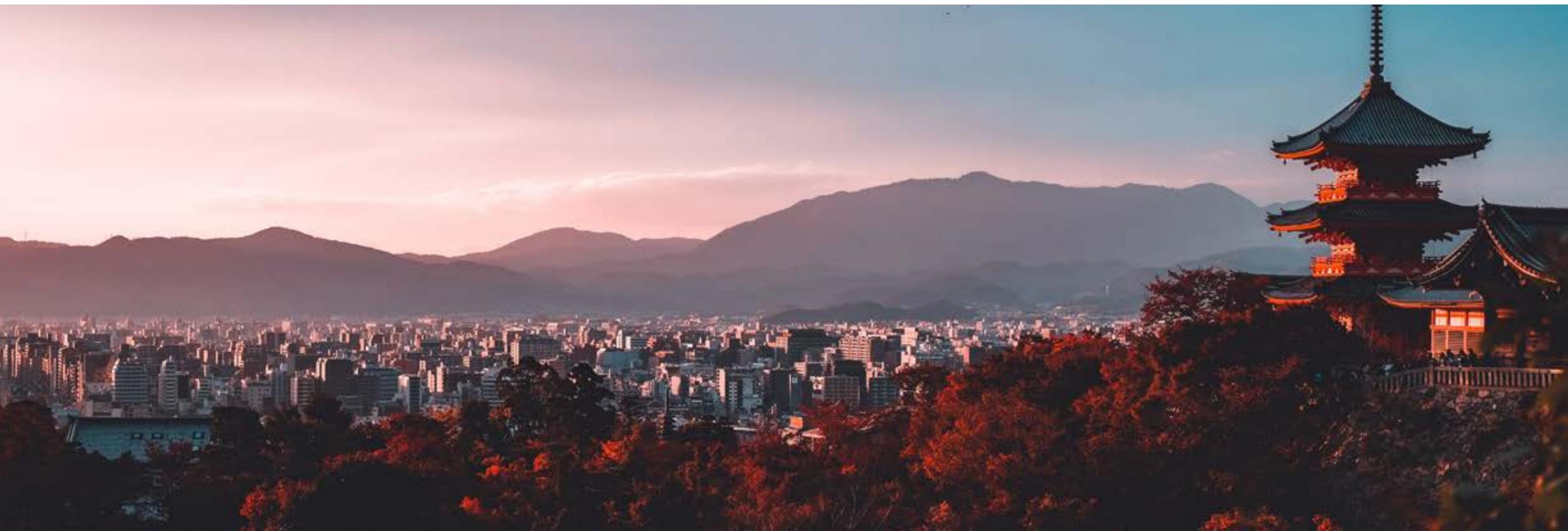
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# Japan

## SOY FOODS REPORT



# Soy Foods Market

Japan's gross domestic product (GDP) is the third largest in the world after the United States and China. Despite a declining birthrate and an aging, declining population, the country is still an economic powerhouse with a population of more than 123 million.

Although the Tokyo 2020 Olympic and Paralympic Games were held on a limited basis in 2021, the country is eagerly aiming to regain its footing by attracting tourism and other activities with an eye to hosting the Osaka Expo in 2025.

In terms of food culture, many Japanese traditional foods are made from soybeans, and they have been attracting attention from around the world in recent years because of their nutritional benefits.



In the area of food soybeans, the Japanese soy industry has established good relationships with U.S. exporters through proactive contracting and premium payments. Although there are many small players among the processors, they can become long-term partners by building a track record and trust.

## SOYBEANS AND FOOD CULTURE

Soybeans are an essential ingredient in traditional Japanese foods such as soy sauce, miso, tofu and natto. The relationship between Japanese people and soybeans has long been a deep-rooted part of the country's culture.

Recently, many products are making use of the functional properties of soybeans. Soy products that are conscious of health and the environment are attracting attention, just as in Western countries.



Source: Ministry of Agriculture, Forestry and Fisheries aff



Source: Japan Tofu Association Japan Natto Cooperative Society Federation



Source: Sagamiya Food



Source: Otsuka Foods



Population

123.2 million people  
(12th in the world)  
2024



GDP

\$4.21 trillion  
(4th in the world)

## POPULATION AND ECONOMIC POWER

Although the birthrate is declining and the population is aging, Japan's population within developed countries is the second largest after the United States.

Japan claims the third largest GDP after the United States and China.

## SELF-SUPPLY RATE OF FOODSTUFFS

Japan's self-sufficiency in grains other than rice is low, and the majority of wheat and soybeans are imported.

The country imports 94% of soybeans. Of this, U.S. soybeans account for 70% of the total, with food soybeans maintaining a high share of 55%.



Rice  
97%



Wheat  
15%



Soybean  
6%

Estimate for 2020

Self-sufficiency ratio = Domestic production / Domestic consumption x 100  
(weight basis)

# Soybean Supply Chain

## GROWTH IN CONTAINER SHIPPING

More than 50% of the food soybeans imported from the United States are transported by container ships, according to USSEC data.

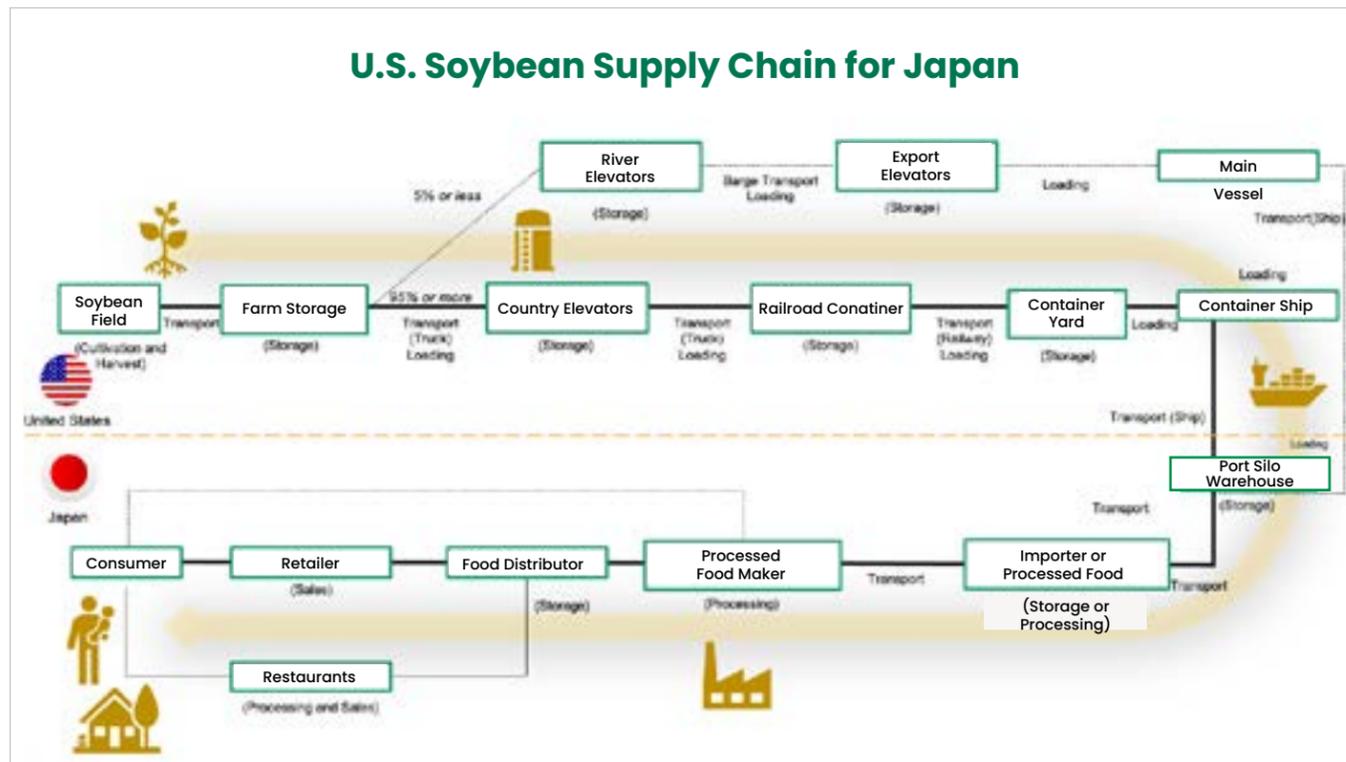
Largely due to factors like traceability promotion and changes in transport logistics, soy food beans originally produced in Indiana, Ohio and Michigan, called IOM soybeans, transitioned from bulk carriers to container ships. By 2020, nearly 95% of these soybeans were container-shipped.

After arrival in Japan, they are distributed to food manufacturers via importers and reach the final consumers through retailers and restaurants.

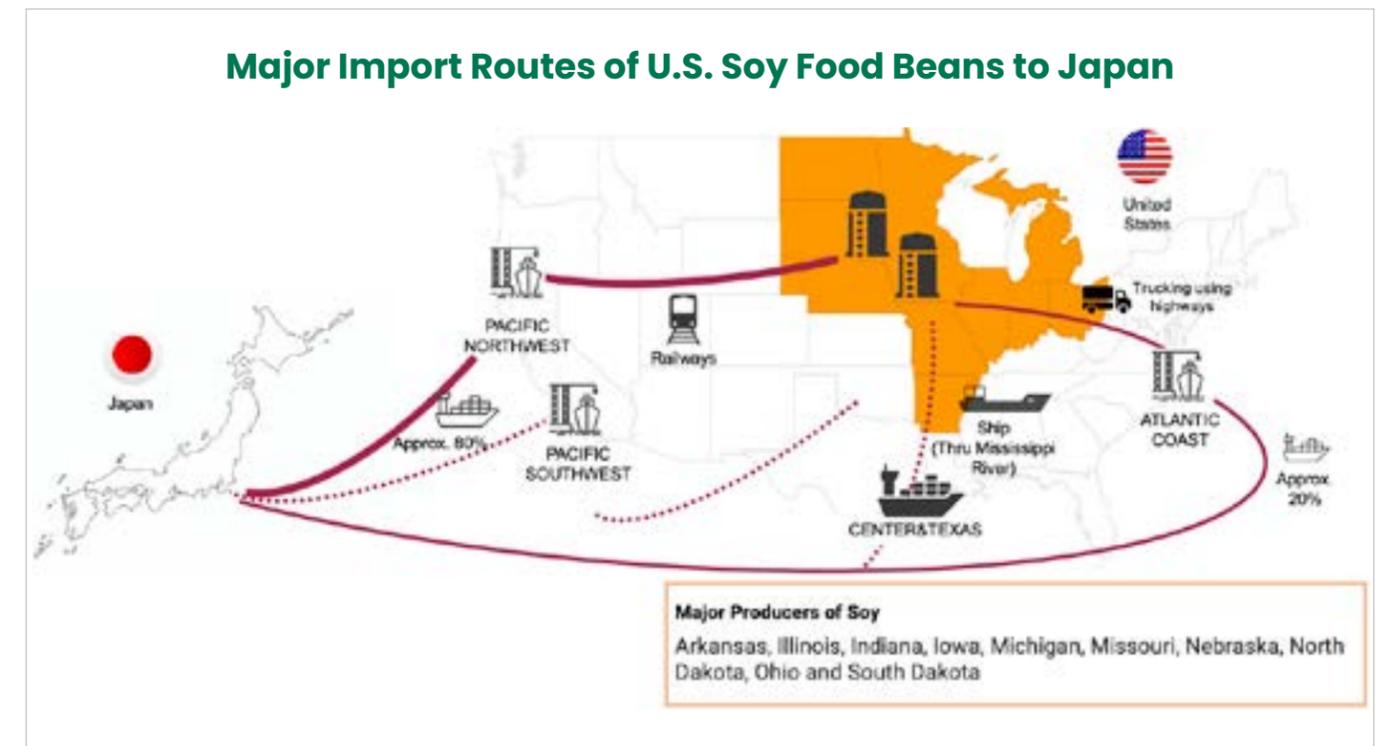


About 80% of U.S. food soybeans for Japan are transported from the Pacific Northwest (PNW) and 20% from the Atlantic Coast. This is due to factors like the promotion of traceability, smaller shipment sizes, changes in acceptance conditions on the importing side and fluctuations in transportation costs. For the Atlantic Coast, shipments are made from ports including Norfolk in Virginia, Savannah in Georgia and ports in North Carolina.

In recent years, a trend has emerged for shipments of soybeans for edible oil processing are being conducted via the PNW route due to the recent drought-induced decrease in water levels at the Panama Canal. Difficulties in navigating the Suez Canal due to Middle East conflicts have made the route via the Cape of Good Hope in Africa more practical, resulting in a delay of about 20 to 25 days compared to the Panama Canal route for arrival in Japan. To avoid this, many have opted for transportation via the PNW route.



Source: Created by Sellwell Co., Ltd. based on USEEC materials and interviews with industry professionals



Source: Created by Sellwell Co., Ltd. based on USEEC materials and interviews with industry professionals

When importing U.S. soybeans to Japan, the main roles for Japanese import companies include the following seven aspects.

### Roles of Japanese Trading Companies in Importing U.S. Soybeans

Item	Details
① Contract Execution 	Premiums in pre-seeding contracts with farmers/suppliers.
② Freight rate determination 	Enter into premium contracts (quantity and price) with U.S. shippers (farmers, sorters, suppliers).
③ Pricing 	Shippers and the Chicago Board of Trade (CBOT) price.
④ Exchange rate determination 	Determine exchange rates with banks and enable overseas remittances.
⑤ Confirmation of customs clearance fees 	Confirm customs clearance fees with the Japanese forwarder (Ottsunaka).
⑥ Delivery and storage fees determined 	Determine shipping and storage charges from the container yard to the food manufacturer.
⑦ Determination of CBOT prices and exchange rates with food manufacturers	Determine CBOT prices and exchange rates based on the requirements of food manufacturers. (In most cases, only premiums (C&F) are implemented because contracts are required prior to planting.)

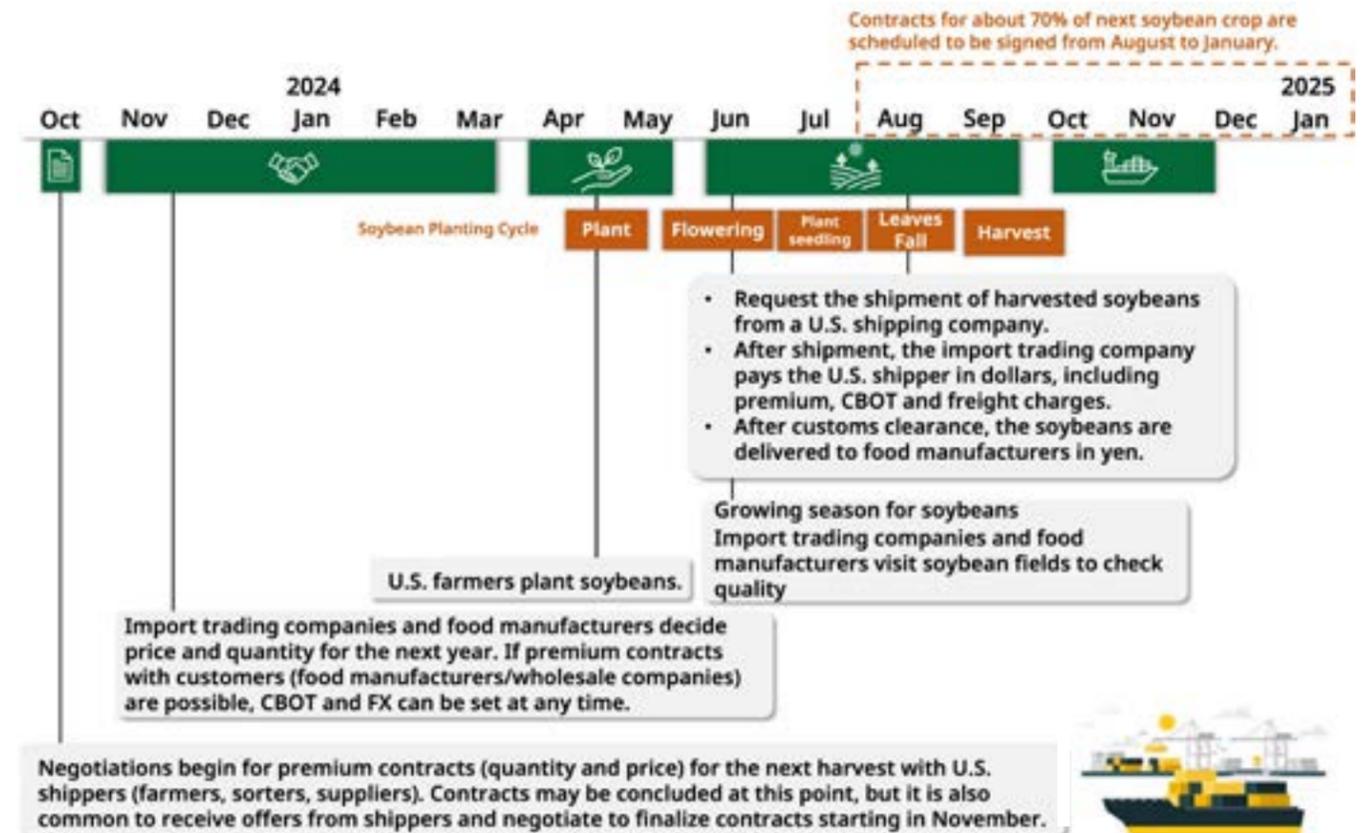
Source: Created by Sellwell Co., Ltd. based on USEEC materials and interviews with industry professionals



### PRODUCTION AND IMPORT PROCESSES

The flow of U.S. soybean production to imports throughout the year follows this pattern.

#### U.S. Soybeans Import Flow (Annual)

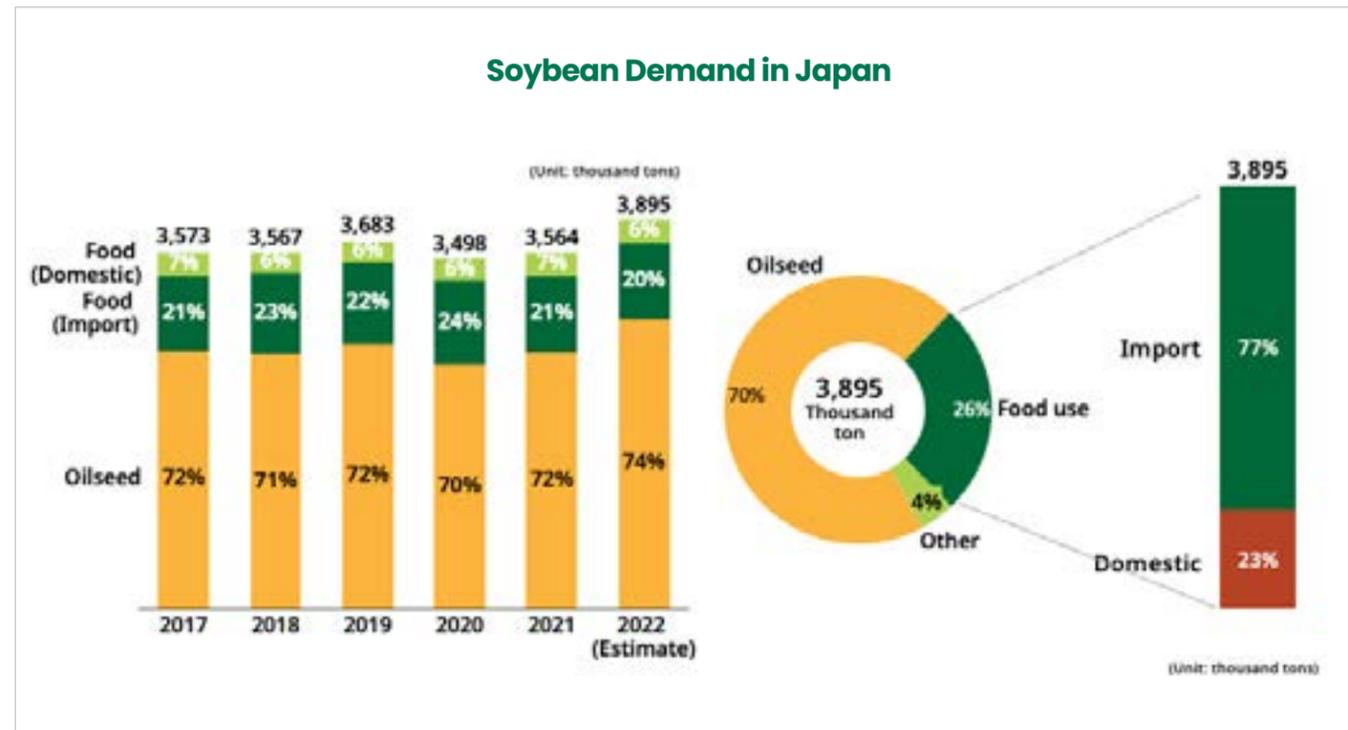


Source: Created by Sellwell Co., Ltd. based on USEEC materials and interviews with industry professionals

# Soybean Demand

## SOYBEAN CONSUMPTION TRENDS

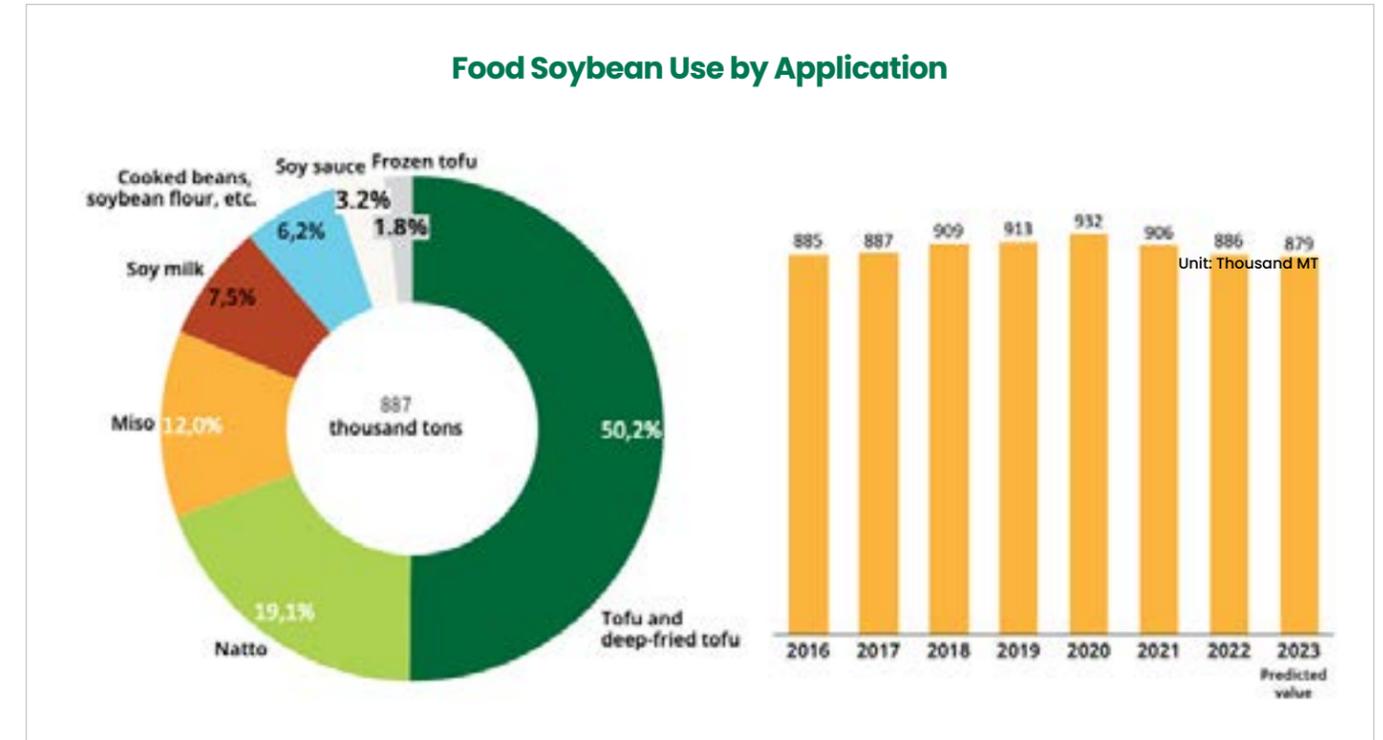
The demand for soybeans in Japan is increasing, reaching approximately 3.9 million tons in 2022. Almost all domestically produced soybeans are used for food purposes.



Source: Ministry of Agriculture, Forestry and Fisheries, 'The soya beans situation'

## FOOD SOYBEAN USE BY APPLICATION

Soybean consumption in Japan is on the rise. About half the soybeans consumed are used for tofu and fried tofu, followed by natto, miso and soy milk.

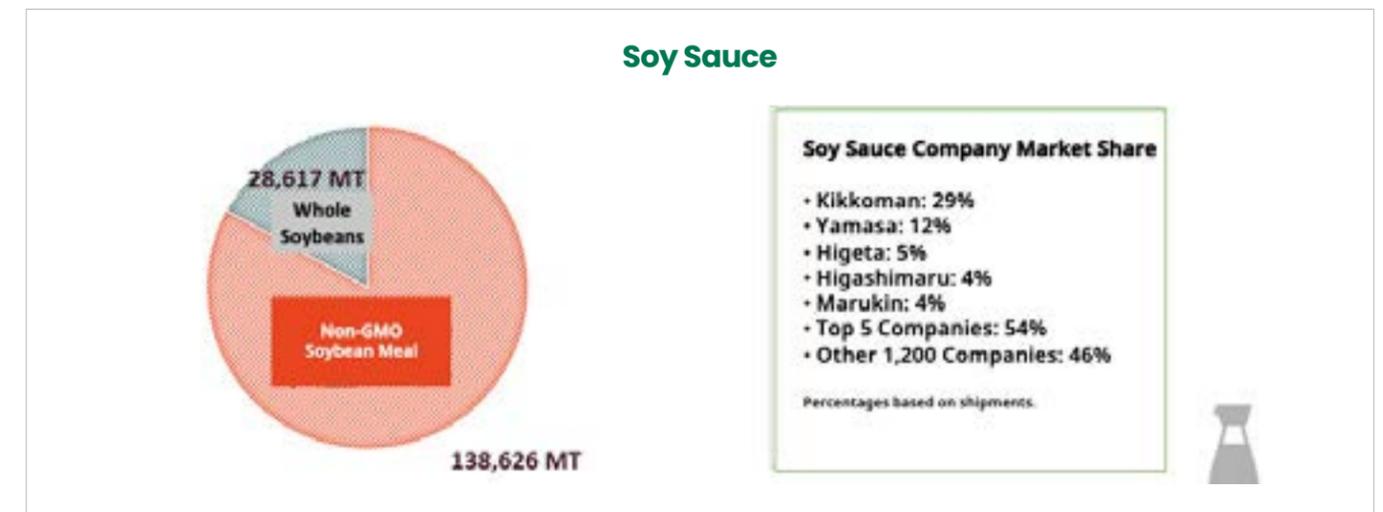


Source: "Shokuhin Sangyo Shimbun" Soybean usage for food by application, USSEC estimates

Japan imports an estimated 230,000 MT of soybean meal in whole soybean equivalent (SBE). That soybean meal is mostly non-GMO. The majority is used for soy sauce production, with a ratio of about 7:3 for soy sauce use versus protein use.

The Soy Sauce graph shows the breakdown of whole soybeans and soybean meal (cake) used as raw materials for soy sauce. Whole soybeans, as a value-added product, account for about 20% of the soy sauce raw materials, while soybean meal makes up 80%. Yearly use of soybean ingredients for soy sauce is 167,243 MT (SBE).

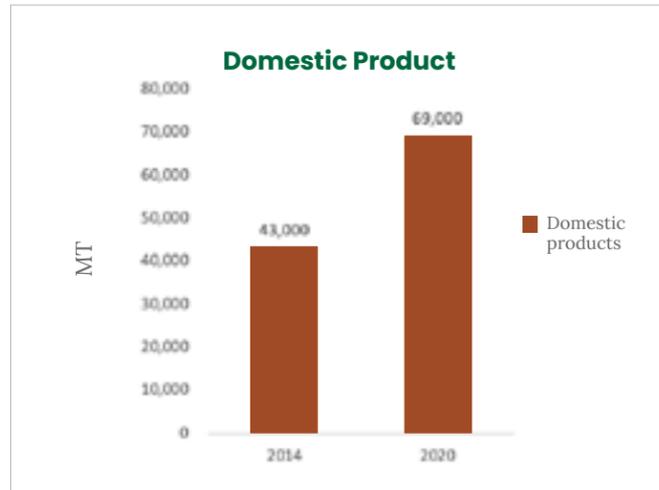
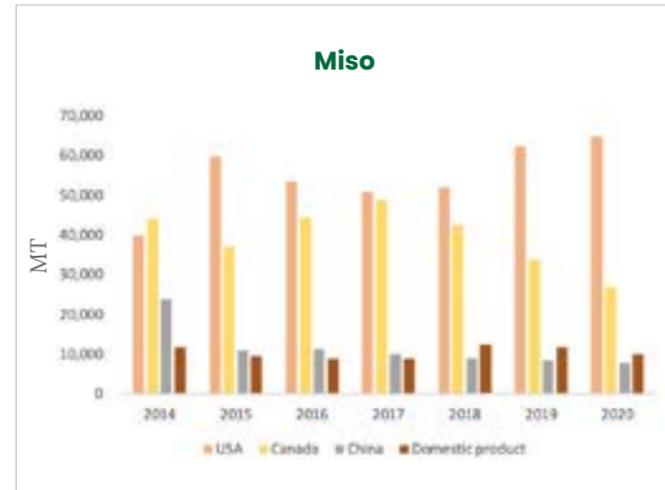
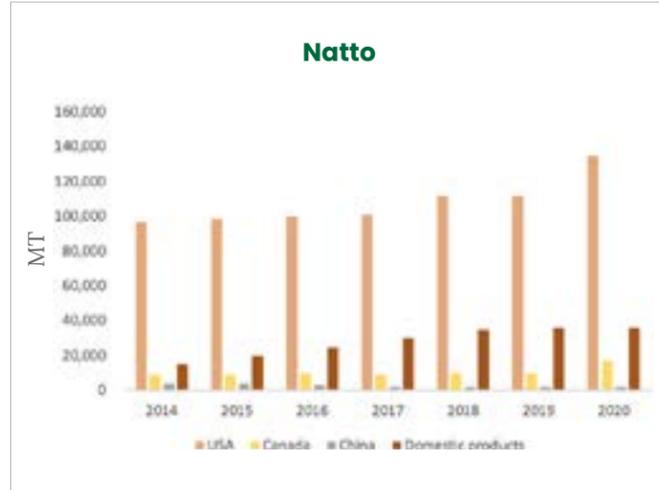
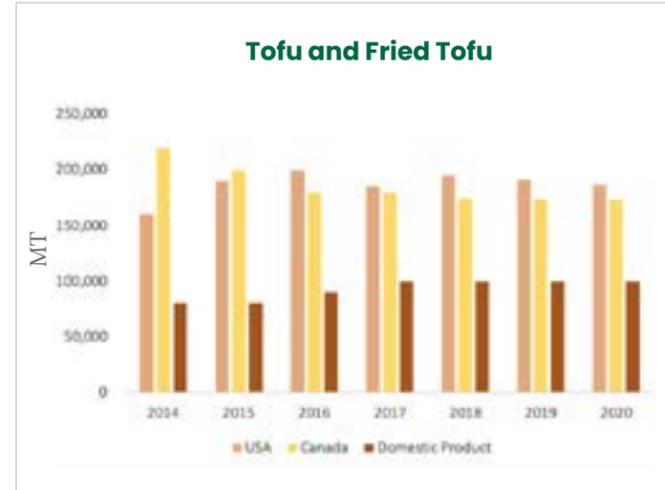
The import of soybean meal is predominantly conducted through exclusive contracts between Japanese specialized wholesalers and U.S. exporters.



Source: USSEC estimates

U.S. soybeans hold a significant share in major categories, particularly in natto.

While miso consumption remains flat, natto and soy milk are driving market expansion.



Source: Soybeans Used for Food by Application, Food Industry News

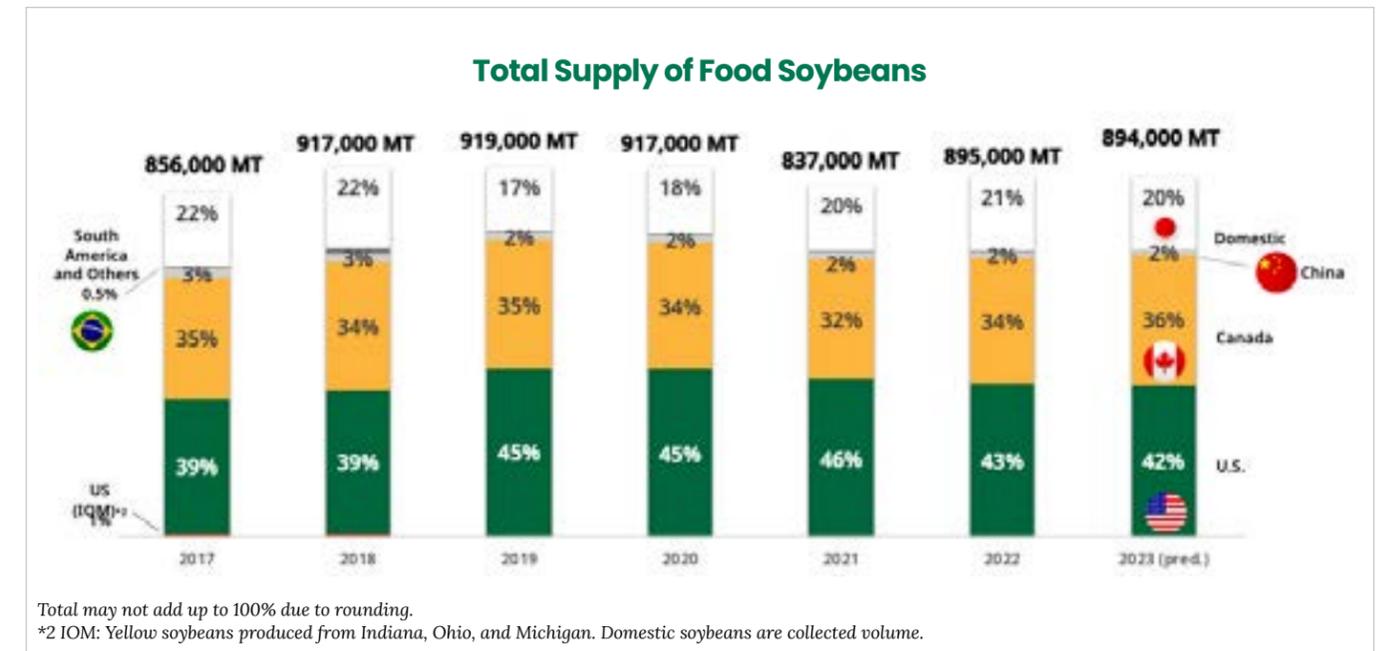


## FOOD SOYBEAN IMPORT TRENDS

U.S. soybeans hold a 43% share of Japan's total food soybean supply, which totaled 895,000 metric tons, including domestic products, in 2022. Of these, approximately 709,200 MT are imported, with 54% of them being sourced from the United States, 44% from Canada and 2% from China, according to USSEC data.

Regarding U.S. soybeans, in the early 1960s, Japan imported soybeans with high protein content and bulk shipments from three states – Indiana, Ohio and Michigan, or IOM soybeans. However, as new varieties were developed and food-grade soybeans production started in northern North America, the number of varieties increased, eventually replacing IOM soybeans.

Since 2022, there has been a shift toward Canadian food soybeans, due to the complex supply situation and a higher increase in premium prices for non-GMO soybeans from the United States. However, industry insiders indicate that many voices are suggesting a return to U.S. non-GMO soybeans.



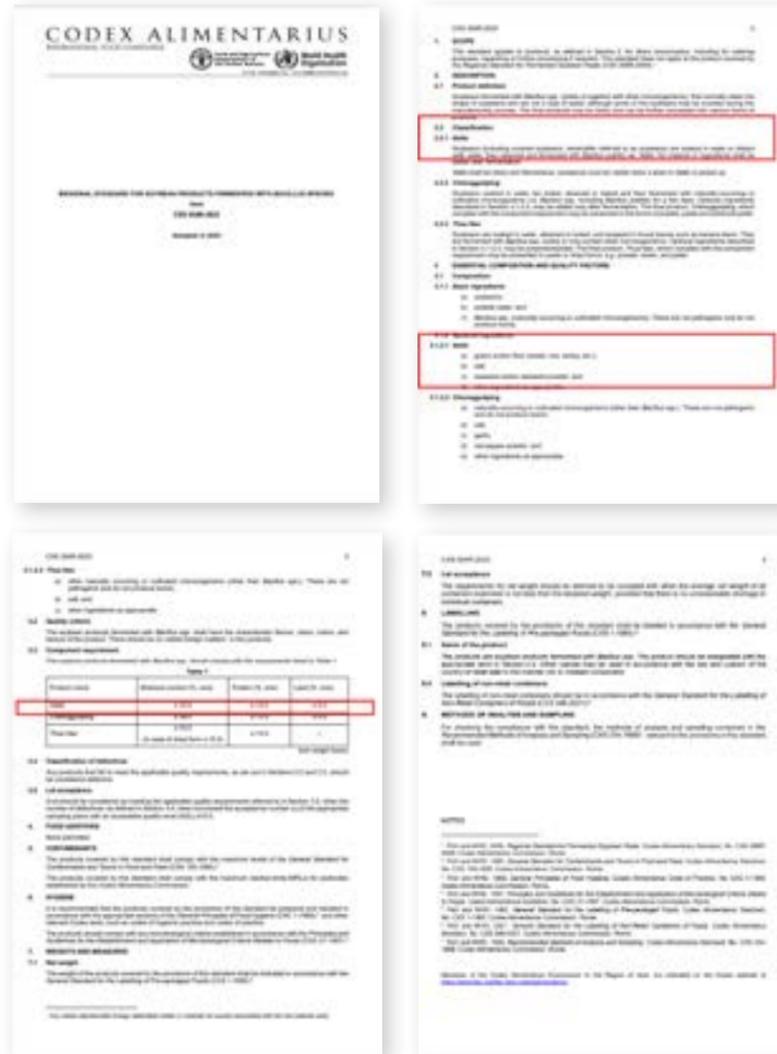
Total may not add up to 100% due to rounding.  
 \*2 IOM: Yellow soybeans produced from Indiana, Ohio, and Michigan. Domestic soybeans are collected volume.

Source: \*Soybean Oilseed Daily, "Trends in Imports of Soybeans for Food Products," 2016 to 2023.

## NATTO STANDARDS

According to the Codex Alimentarius Commission Asian Regional Standard, natto is classified as a “fermented soybean bacterial product.” To distinguish it from other traditional Asian soybean fermented products, it is defined as follows: **Soybeans (including split soybeans) soaked in water or weakly salted water, steamed and fermented by *Bacillus subtilis* var. *natto* to produce viscous soybeans without adding any optional ingredients thereafter.** The term “no addition of any ingredients after fermentation” means “no addition of salt or other additives for flavoring or preservation purposes after fermentation.”

In addition to the above, the unique viscosity of natto, the thin thread-like substance that appears when the natto is lifted with chopsticks, is defined as “the visible thread-like element should appear when the natto is lifted.”



Source: Food and Agriculture Organization of the United Nations (FAO)

## REFERENCE: SIMILAR SOY FERMENTED FOODS

### CHONGGUTCHAN FROM KOREA

This soybean product maintains the shape of the soybean and is fermented using *Bacillus subtilis*, including *Bacillus subtilis*.

Boiled soybeans are fermented with *Bacillus subtilis*, then salt and chili powder are added.



### KINEMA FROM NEPAL

This is made from soybeans fermented using *Bacillus Subtilis*, maintaining their shape.

Steamed soybeans are lightly mashed, then wrapped in banana or other hardwood leaves and fermented. This includes those dried in the sun.

Other bacteria that may be added include lactic acid bacteria or *Enterococcus*, yeast or *Candida*, and mold like *Geotrichum*.



### TOCHI FROM CHINA

It is made by fermenting soybeans as-is, using *Bacillus* species and other genera like *Aspergillus*.

Steamed black soybeans, after adding salt, koji, etc., are fermented and dried.

When using *Bacillus subtilis*, the steamed black soybeans are put in burlap or grass bags during cultivation, resulting in a substantial amount of sticky substance on them.



### TUA NAO SA FROM THAILAND

A soybean product that is fermented using *Bacillus subtilis*, maintaining the shape of the soybeans.

Whole soybeans are steamed and fermented without salt, then wrapped in banana or other broadleaf leaves.

It is fermented primarily with *Bacillus subtilis* but may also contain lactic acid bacteria, *Enterococcus*.



## ADVANTAGES OF U.S. SOYBEANS

While Japanese consumers generally prefer domestic soybeans, the stable supply, price and quality of U.S. soybeans are significant strengths for manufacturers.

It's commonly believed that older consumers, particularly seniors, tend to prioritize domestically grown products. Therefore, appealing to younger consumers by highlighting the advantages of U.S.-grown soybeans, especially in terms of sustainability efforts, is expected to enhance long-term value and expand the market further. Currently, USSEC is working on initiatives to lay the groundwork for this.

## THE VIEW OF A JAPANESE SOY FOODS MANUFACTURER

- This company has been using non-genetically modified U.S. soybeans to manufacture its products since the 1980s.
- In Japan, domestic soybeans are generally preferred by consumers, so this company uses domestic soybeans as well as U.S. soybeans to make their products.
- The strength of U.S. soybeans lie in their vast production volume, stable supply, price stability compared to other origins, and quality. In addition, the state-of-the-art transportation infrastructure also plays a significant role.
- For these reasons, this company uses U.S. soybeans for the products that require stable production throughout the year. U.S. soybeans are also highly suitable for processing and have garnered many fans within the industry.



# Trends in Soybean Products

## MAJOR SOY PRODUCTS

### TOFU

In addition to traditional tofu products such as momen and kinugoshi tofu, as well as aburaage, many products that are emerging expand the uses of tofu. A representative example is Sagamiya Foods' Beyond Tofu, which emphasizes tofu's high-protein, low-carbohydrate characteristics in a way that appeals to the generations seeking these features.



**Takano Foods Tofu Varieties**



**Asahikco Tofu Bars**



**Sagamiya Foods Beyond Tofu**



### NATTO

In the expanding natto market, there is a trend toward both functional appeal and diversification of flavors. Takano Foods, which leads the market with its staple products and functional appeal, and Mitsukan, which sells more innovative products, stand out.

**Takano Foods Natto Varieties**



**Mitsukan Natto Products**



### MISO

Miso is one of the traditional soybean products. Recently, instant miso with dashi, which is easy to use, has also become more common.

**Hanamaruki Mutenka Miso**



**Marukome Liquid Miso**



### SOY SAUCE

The market is dominated by Kikkoman and Yamasa soy sauce. Many products feature high-preservation containers and low-sodium concepts.

**Kikkoman**



**Yamasa Soy Sauce**



### SOY MILK

Driven by health consciousness and other factors, the market is expanding. Kikkoman is leading the market, and recently, soy milk yogurt has also been sold.

**Kikkoman Soy Milk**



**Pokka Sapporo Soy Milk Yogurt**



## SOYBEAN MEAL

Approximately 230,000 MT of non-GMO soybeans are used for soy sauce and soy protein production.

## OTHERS

Soy protein is used in various major products, including protein supplements and a new category of beer.

Meiji Zavas Soy Protein



Asahi Beer



## NEW TRENDS IN SOY PRODUCTS

### LOW-CARBOHYDRATE, HIGH-PROTEIN APPEAL

The trend is toward products that replace wheat with soy as an ingredient.

Nissin Sysco Sugar



Natural Lawson Almost Chicken Nuggets



Made with coarse soy protein instead of chicken

Base Food Base Bread



Soy flour is used as raw ingredient

Many of these products are being launched by brands that market their products to be associated with health, such as Natural Lawson and Muji.

## MEAT SUBSTITUTES

Soy meat products are gradually appearing in Japan.



In September 2023, the Japan Soy Meat Association was established. Its purpose is to promote the spread and market expansion of soy meat, aiming for overall development of the industry. Core members of the association include Marukome, Starzen, Itoham Yonekyu Holdings, Nippon Ham and Otsuka Foods.

Marukome Soy Meat Products



Pietrox Soycle Hatake-Born Bolognese



# Transgenic Labeling Policy

## GENETICALLY MODIFIED LABELING SYSTEM REVISIONS

As of April 1, 2023, the voluntary labeling system for genetically modified organisms, or GMOs, has been revised to accurately convey information.

Previously, if unintended contamination was within 5% after segregation production and distribution management, labels such as “not genetically modified” or “segregated non-genetically modified” were allowed.

Under the new system, there are two options.

1. Indicating that the agricultural products have been properly segregated in production and distribution management.
2. Not displaying any information.

These options are now being implemented.



## MARKET RESEARCH ON LABELING CHANGES

Regarding the revised “Revised Genetically Modified Organism Labeling” implemented in April 2023, a private organization conducted market research in July to August of the same year, with a total of 1,001 surveys.

The number of surveys conducted among tofu manufacturers was 321. Among them, 61 companies, or 19%, still claim “not genetically modified.”

The same organization believes that it is difficult to avoid unintended contamination, even with segregation distribution production management for genetically modified crops at the level of non-detection in official inspections. It expects a significant decrease in the number of companies claiming “not genetically modified.”

**Example of current system display**

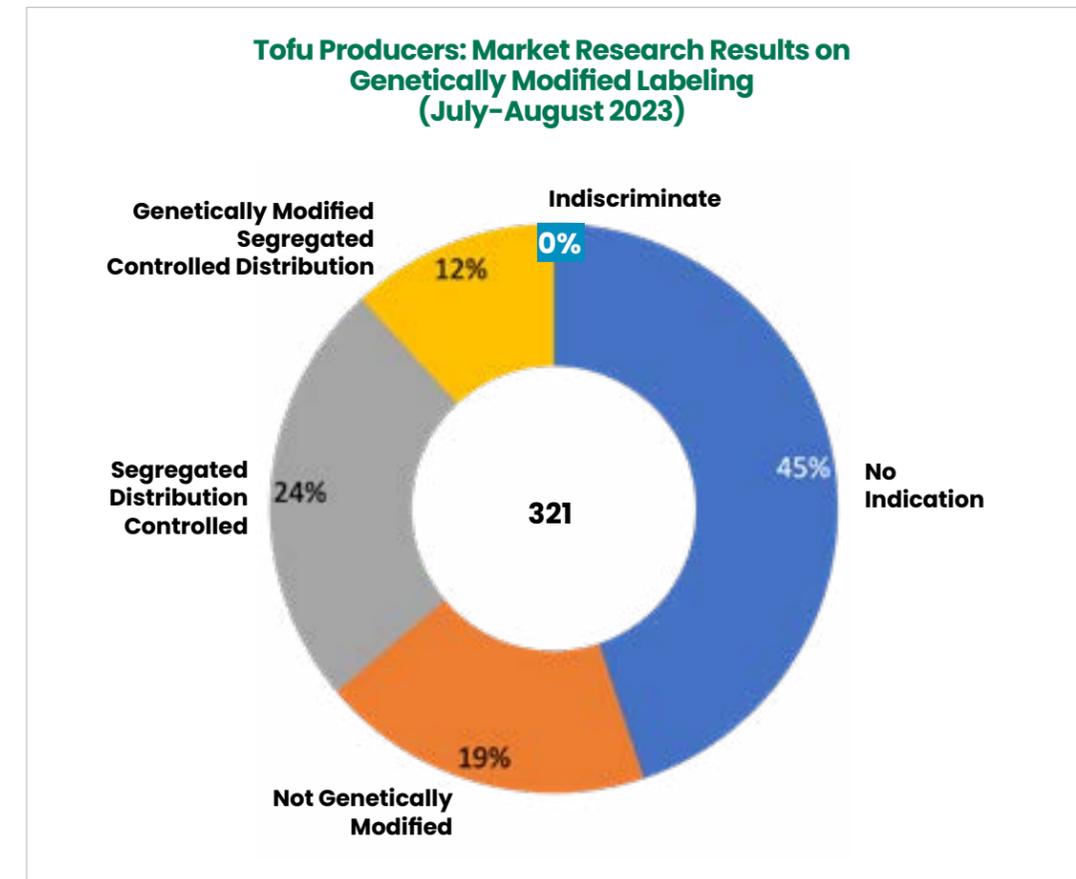
Source: WEDGE Infinity

**Example of new system display**

① Indication that the agricultural products are properly sorted and managed for production and distribution

② Do not display

Ingredients: Soybeans, coagulant ((magnesium chloride "bittern"))



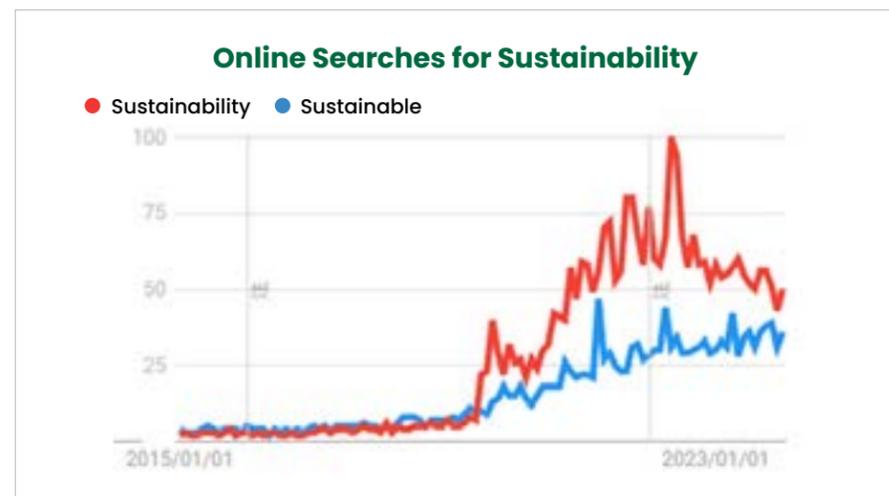
Source: ZENZOUREN Report February 2024

# Sustainability in Japan

## POSITIONING OF SUSTAINABILITY

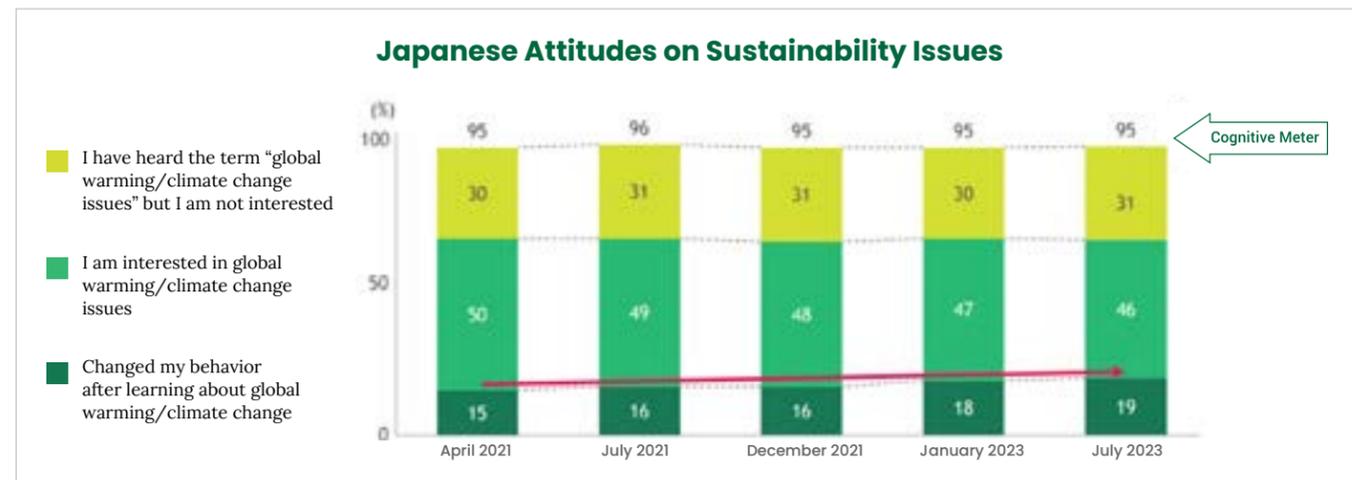
Since 2019, interest in sustainability has rapidly increased in Japan. It has now become firmly established in society as a sustained focus area.

The chart shows how interest in sustainability goes from growing to established.



Source: Google Trends

While Japanese people are often perceived internationally as having low environmental awareness, in reality, the number of people taking sustainable actions is gradually increasing.

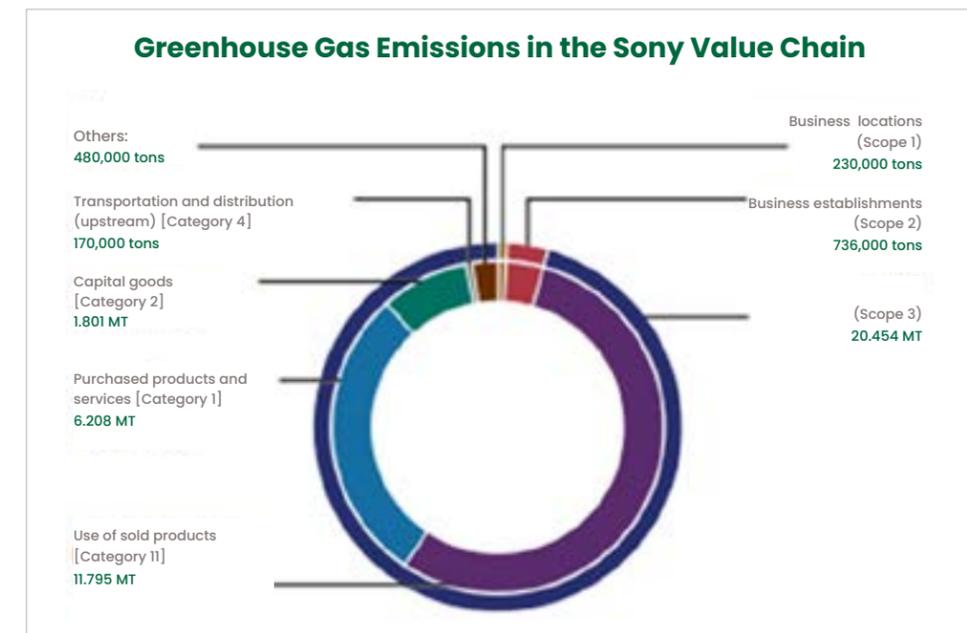


Source: Boston Consulting Group 7th Annual Consumer Attitudes Survey on Achieving a Sustainable Society



Businesses are also enhancing their environmental awareness, with major companies like Sony disclosing not only their own greenhouse gas emissions, but also those of other companies, with scope 3 emissions.

Major retailer Aeon is also progressing with efforts to reduce greenhouse gas emissions across its entire value chain.



Source: Sony Sustainability Report 2023

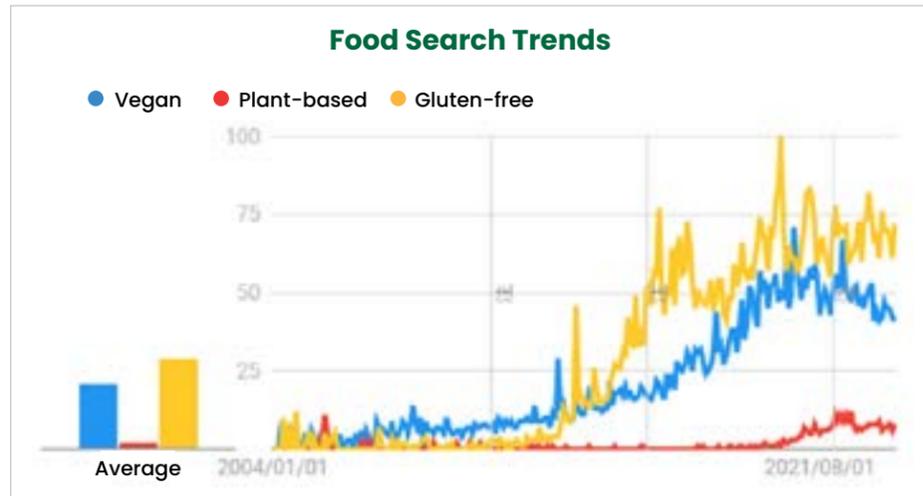


Source: Aeon

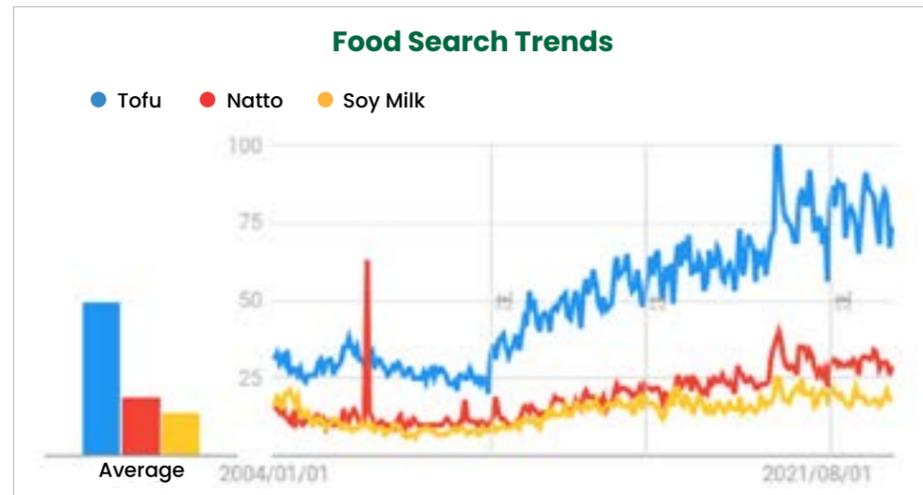


Aeon and Muji also adopt labels that certify products as "greenhouse gas reducing" by the Ministry of Agriculture, Forestry and Fisheries  
Source: Muji

Amid the growing and established awareness of sustainability, there is increasing attention on sustainable food. Soy foods, which are inherently associated with elements of environmental consideration and health in Japanese culture, are expanding their influence even further due to this trend.



Source: Google Trends



Source: Google Trends



Kagome promotes plant-based soy foods  
Source: Kagome



Soy yogurt made without milk  
Source: Fujikko



Sagamiya Foods sells many tofu and soy milk alternatives  
Source: Sagamiya Foods



First functional food in Kikkoman's soy milk series  
Source: Kikkoman

## SUSTAINABLE U.S. SOY CASE STUDIES

Products using the Sustainable U.S. Soy logo are increasing, and it is frequently used in new categories such as tofu bars. The logo certifies use of soybeans that comply with the U.S. Soy Sustainability Assurance Protocol (SSAP).

<b>Product Category</b>	Natto and Tofu Bars
<b>Manufacturer</b>	Seven & i Holdings
<b>Product Name</b>	Tofu Bars, Natto
<b>Sales Outlets</b>	7-Eleven, Ito-Yokako

The Sustainable U.S. Soy logo is used on Seven & i Holdings' private brand tofu bars and natto. The company, which owns 7-Eleven and Ito-Yokado among others, is Japan's largest retail group with a vast number of stores where these products are available.



Some of the products using the Sustainable U.S. Soy logo



Aeon Tennocho SC



Source: Asahico

Seven & i Holding's private brand tofu bars and natto, produced by Asahi Co.  
Source: 7-Eleven



7-Eleven Yokohama Ebidakita 3-chome store  
Source: 7-Eleven



Ito-Yokado Tama Plaza Store  
Source: 7-Eleven



<b>Product Category</b>	Natto
<b>Manufacturer</b>	Kosugi Foods Corporation
<b>Product Name</b>	Tsuyudaku Natto, etc.

The 27th National Natto Appraisal, held on November 9, 2023, awarded this company in the U.S. Soybean category. It also received two awards from U.S. organizations, the SSGA U.S. Award and the U.S. Soy Sustainability Ambassador Award.



<b>Product Category</b>	Soy Protein
<b>Manufacturer</b>	Sankishoji Co., Ltd.
<b>Product Name</b>	MIKI Protein 95 Supreme

On the official blog, the company announced that Miki Protein 95 had received the Sustainable U.S. Soy certification mark.



<b>Product Category</b>	Tofu
<b>Manufacturer</b>	Miyoshi Food Industry Co., Ltd.
<b>Product Name</b>	Nigari Soft, Nigari Men

The products are marketed as “safe and secure tofu made with soybeans grown under contract.” The company’s official website explains its commitment to U.S. soybeans.



<b>Product Category</b>	Tofu
<b>Manufacturer</b>	Itami Foods Co., Ltd.
<b>Product Name</b>	Handmade Soft Momen

This tofu store, established in 1958, adopted Sustainable U.S. Soy. The company’s official website explains that they won the 2018 U.S. Soy Ambassador Award.



<b>Product Category</b>	Miso
<b>Manufacturer</b>	Fujijin Co., Ltd.
<b>Product Name</b>	Yoake Awase Miso (White)

Product packaging mentions the use of Sustainable U.S. Soy.



<b>Product Category</b>	Aburaage, or Fried Tofu
<b>Manufacturer</b>	OK Food Industry Co., Ltd.
<b>Product Name</b>	Seasoned Aburaage

On its official website, the company mentions that it uses Sustainable U.S. Soy as one of its SDG initiatives.



<b>Product Category</b>	Soybeans for Food
<b>Manufacturer</b>	Saitama Ryoukoku Co., Ltd.
<b>Product Name</b>	Soybean Oil (concrete re-release agent), Food Soybeans

This import trading company explains the added value of Sustainable U.S. Soy on its official website.



<b>Product Category</b>	Soy Meat
<b>Manufacturer</b>	Asahiko Co., Ltd.
<b>Product Name</b>	Tofu Meat Dumplings, Tofu Meat Shumai

These products are marketed as tofu of the future that is friendly to humans and the earth. The ToffuProtein brand uses Sustainable U.S. Soy.



Source: Asahiko

<b>Product Category</b>	Natto
<b>Manufacturer</b>	Nifuk Food Co., Ltd.
<b>Product Name</b>	Ooita Shiso Natto Genovese-style

This natto mentions the use of Sustainable U.S. Soy as contract-grown, small-grain soybeans.



Source: NIHO Foods

<b>Product Category</b>	Tofu
<b>Manufacturer</b>	Sagamiya Shokuryo Co., Ltd.
<b>Product Name</b>	Odashi Yakko (6 varieties), etc.

The company's official website explains use of the Sustainable U.S. Soy certification mark. "We use SSAP-certified soybeans, certified by the U.S. Soybean Export Association, which practices sustainable agriculture, including forest and water resource conservation and respect for the human rights of workers."

Source: Sagamiya Foods Co., Ltd.



## SUSTAINABILITY TRENDS

The Japan Sustainable Brands Index, a survey released by Hakuten Corporation in February 2023, identified the top 45 Japanese companies in terms of their SDGs contribution image and SDG evaluation.

This section highlights Suntory and Seven & i Holdings, which are representative companies in the food manufacturing and retailing industries, respectively.

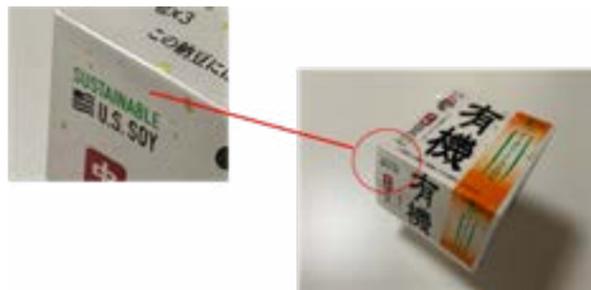
### Top 45 Sustainable Japanese Brands

順位	企業名	2022 JSBi	順位	企業名	2022 JSBi	順位	企業名	2022 JSBi
1	良品計画(無印良品) (MUJI)	110.09	16	P&G(プロクター・アンド・ギャンブル・ジャパン)	104.79	31	ライオン(LION)	103.81
2	トヨタ自動車(TOYOTA)	109.68	17	アップル(Apple)	104.76	32	ENEOS	103.73
3	住友林業	107.18	18	日立製作所(HITACHI)	104.59	33	ファンク(FAVCL)	103.70
4	王子製紙*北池田	106.96	19	日本製紙クレシア*ウツクス・スツツキ池田	104.51	34	山崎製パン (Yamazaki Bread Company)	103.67
5	味の素A.G.F.*フレンディ池田	106.32	20	サントリー(SUNTORY)	104.46	35	ヤクルト本社(Yakult)	103.57
6	スターバックスジャパン(STARBUCKS)	106.20	21	味の素(AJINOMOTO)	104.36	36	ダイキン工業(DAIKIN)	103.57
7	セブン&アイホールディングス*イトーヨーカ堂池田	106.06	22	ハウス食品(Haust)	104.26	37	全日本空輸(ANA)	103.57
8	ユニチャーム(unicharm)	105.85	23	クボタ(Kubota)	104.25	38	パナソニック(Panasonic)	103.46
9	森永乳業(morinaga) (Morinaga Milk Industry)	105.63	24	東京ガス(TOKYO GAS)	104.21	39	花王(Kao)	103.45
10	ウォルト・ディズニー・ワールド*ディズニー	105.35	25	西日本旅客鉄道(関西日本)	104.16	40	キリンビール(KIRIN) (Kirin Beer)	103.43
11	イオン(MION)	105.22	26	ダスキン(DUSKIN)*東洋サービス	104.12	41	伊勢丹(ISETAN)	103.39
12	味の素(Ajinomoto)	105.06	27	日産自動車(NISSAN)	104.07	42	マルパニFD	103.35
13	モンベル(mont-bell)	104.97	28	大塚製薬(Otsuka)	104.03	43	西野製菓(Inetars)	103.17
14	YOTO	104.83	29	ファーストフィナンシャルグループ*エニックス池田	103.93	44	住友化学	103.15
15	楽天グループ (Rakuten Group)	104.83	30	アビスオーツ	103.88	45	日本コカ・コーラ (Coca-Cola Japan)	103.14

Source: Japan Sustainable Brands

<b>Product Category</b>	Natto
<b>Manufacturer</b>	Takahashi Food Industry Co., Ltd.
<b>Product Name</b>	Organic Natto

This packaging carries the Sustainable U.S. Soy label.



Source: Takahashi Food Processing

<b>Product Category</b>	Tofu
<b>Manufacturer</b>	Asahiko Co., Ltd.
<b>Product Name</b>	Toffu Protein

The ToffuProtein brand is expanding its product line from side dishes to snacks. The manufacturer, Asahiko, uses the Sustainable U.S. Soy logo for all products except those made from domestic soybeans.



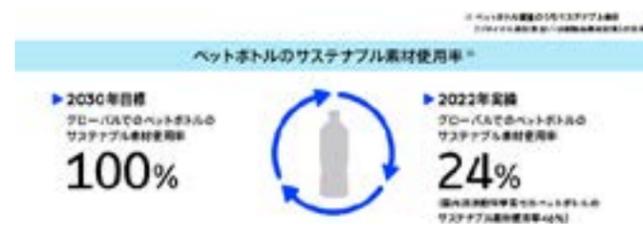
Source: Asahiko

# SUNTORY

Suntory set specific target values for 2030 and 2050. The company emphasizes efforts related to greenhouse gas emissions, containers and packaging, as well as water.

Following are some of the goals and initiatives for 2030, with a particular emphasis on goals and initiatives related to water.

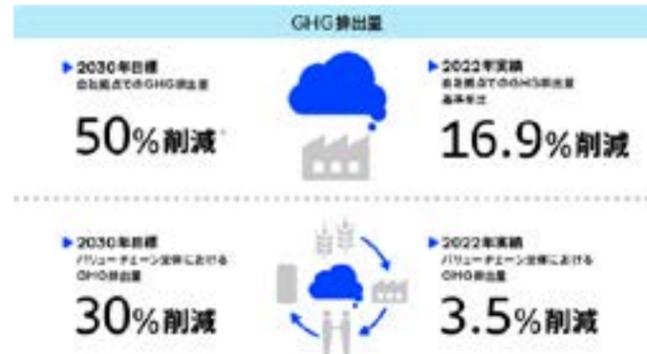
## Percent Sustainable PET Bottles



The company is working toward a goal of 100% of PET bottles made from sustainable materials by 2030. Suntory is collaborating with Coca-Cola and PET Bottle, their biggest rivals, in horizontal recycling awareness communication.



## Greenhouse Gas Emissions



Suntory targets a 50% reduction in emissions at company sites and 30% reduction throughout the value chain by 2030. Communications highlight progress through 2022.

Part of this effort includes plans to introduce the largest 16-megawatt scale green hydrogen production system in Japan by 2025 at the Hakushu factory and Hakushu distillery in the Minami Alps.



Source: Suntory Group Sustainability



## Water-Related Goals



Goals focused on water include reducing water use per unit by 35% at Suntory factories, conserving water used in factories and working with suppliers to improve water use efficiency, especial in water-stressed regions. The company also aims to raise water awareness to more than 1 million people.

Other efforts aim to nurture forests in watershed areas to the extent of more than double the groundwater usage in the factory. Suntory works through the Water Science Institute to manage the watershed conservation area to protect the environment.



Source: Suntory Group Sustainability



One of the key priorities for Seven & i Holdings is to realize a society that is environmentally friendly. Company efforts aim for decarbonization, a circular economy and coexistence with nature. Numerous specific initiatives relate to food.

**Procurement of Sustainable Raw Materials**



The company strives to sell products ensured to be sustainable, including those certified by organizations like the Marine Stewardship Council, which operates and manages certification systems for “sustainable and environmentally conscious fishing.”



Biodegradable garbage disposal machine at Ito-Yokado

**Food Loss and Food Recycling Measures**



The diagram shows relaxed delivery deadlines for products with a 6-month expiration date. It compares the 1/3 rule above to a 1/2 approach below.



**Effective Use of Resources**



Small plastic bottle collector for convenience stores.

**Introduction of Environmentally Friendly Containers and Packaging**



Adopted “rice link” for package printing.

**Plastic Bottle Collection**

	2018年度	2019年度	2020年度	2021年度	2022年度
回収量 (トン)	8,900	9,740	8,700	10,800	12,400
設置数 (台)	759	820	1,001	2,098	3,174

Company efforts to collect plastic bottles continue to grow, represented by the volume collected in metric tons in the first line and the number of collection machines installed in the second line.



Paper containers have been introduced. Sandwiches are combined with paper material in the red frame areas.

Source: Seven & i Holdings Key Issue 3

## DIALOGUE ON SUSTAINABLE AGRICULTURE

### INAUGURAL JAPAN-U.S. DIALOGUE ON SUSTAINABLE AGRICULTURE

In February 2024, the Ministry of Agriculture, Forestry and Fisheries of Japan and the U.S. Department of Agriculture held the first Japan-U.S. Dialogue on Sustainable Agriculture. Both Japan and the U.S. exchanged information on various challenges to achieve sustainable agriculture and engaged in discussions aimed at enhancing future cooperation. Attendees included leaders from both organizations.

The USDA Foreign Agricultural Service of the U.S. Embassy gave a presentation that covered topics including U.S. Soy sustainability and the dissemination of products certified by the U.S. Soybean Sustainability Assurance Protocol, or SSAP.



To understand advanced examples of genome editing technology in Japan, participants visited Sanatec Life Sciences Co., Ltd. and the National University Corporation, University of Tsukuba.



The Central Union of Agricultural Cooperatives (JA-ZENCHU), the General Incorporated Association AgVenture Lab and the National Agriculture and Food Research Organization (NARO) engaged in an exchange of opinions during the event.



## CREDIT: USSEC JAPAN

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[Asahikco](#)

[Base Food](#)

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[Miki Corporation](#)

[Mitsukan](#)

[Miyoshi Food Industry Co., Ltd](#)

[Natural Lawson](#)

[Nissin Sysco](#)

[OK Food Industry Co., Ltd.](#)

Organization interviews

[Pietro](#)

[Pokka Sapporo](#)

[Saitama Ryoukoku Co., Ltd.](#)

[Sagamiya Foods](#)

Sapporo Holdings Ltd.

SDGs ACTION!

[Similar Fermented Soybean Products](#)

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Suntory Seven Themes on Sustainability

[Takano Foods](#)

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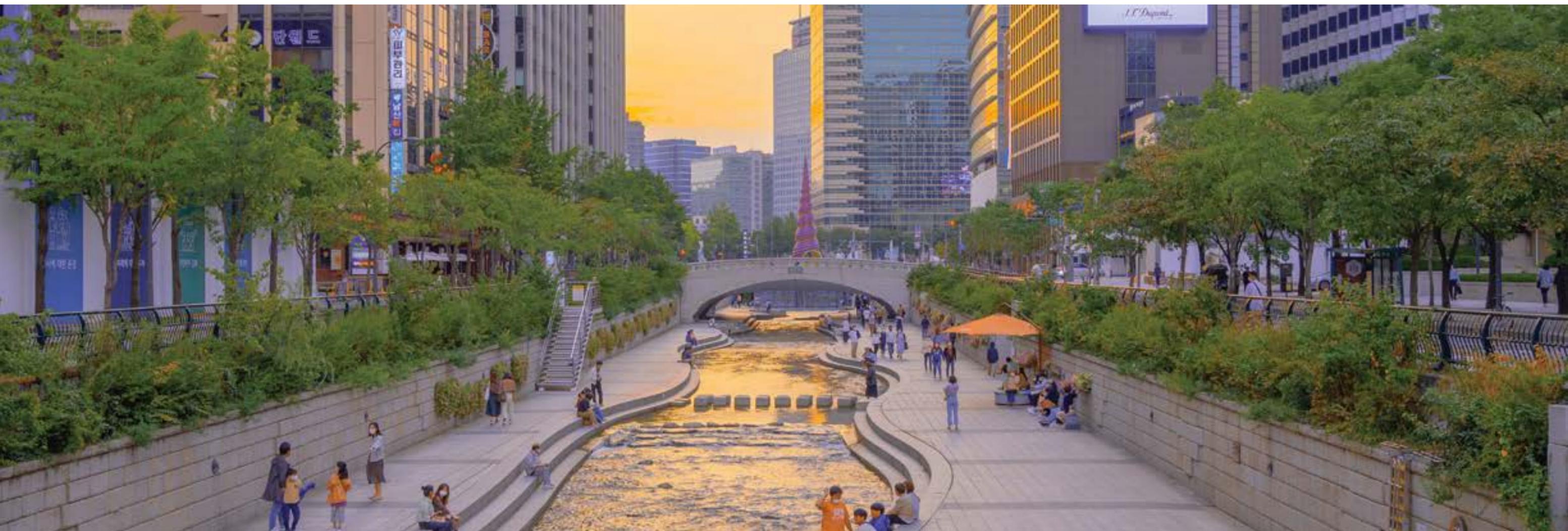
YouTube / Tastemade Japan

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# Korea

## SOY FOODS REPORT

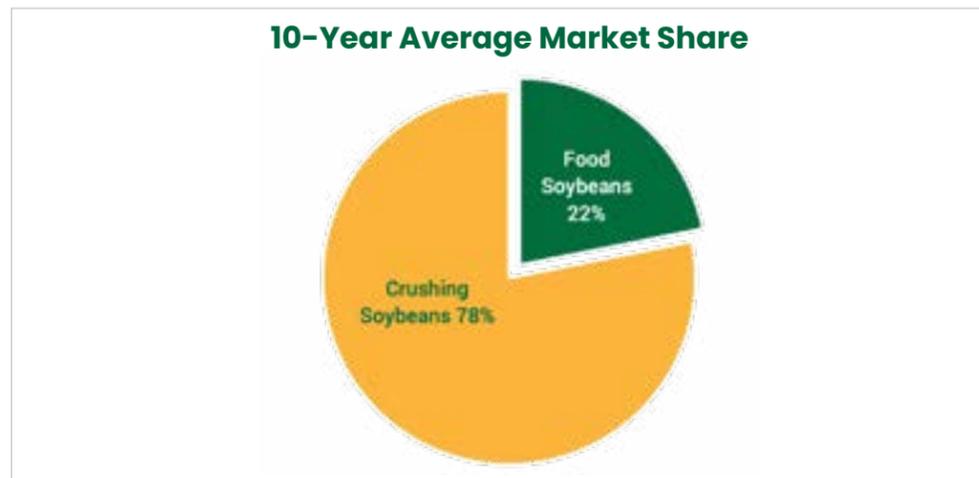
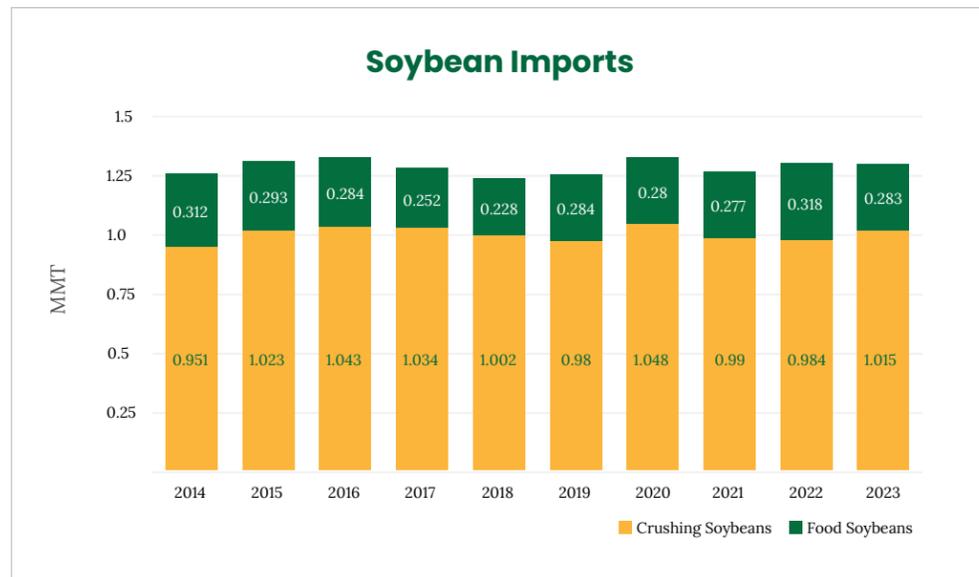


# Trade

## SOYBEAN IMPORTS

Korea's soybean import market is divided into food-grade soybeans and soybeans for crushing. All imported food soybeans are non-GMO, with a GMO threshold of 3%, pursuant to the laws of the Republic of Korea. All imported crushing soybeans are GMO soybeans.

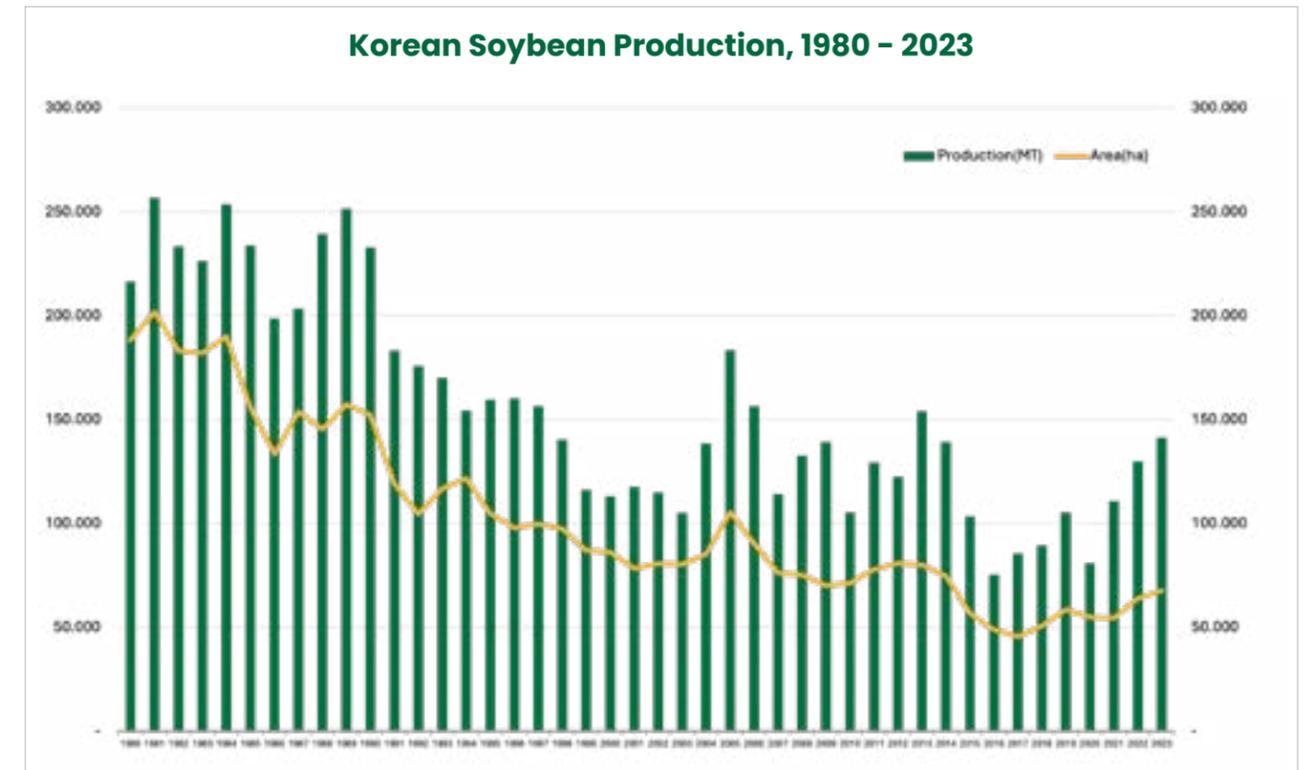
Over the past 10 years, the annual average import volume of all soybeans was 1.3 million metric tons (MMT). Of that, food soybeans accounted for 22%, and crushing soybeans 78%.



Source: Statistics Korea



## KOREAN SOYBEAN PRODUCTION



Source: Statistics Korea

Korea produces several types of beans, including soybeans, red beans, mung beans and peas. Among these, food-grade soybeans use the largest growing area.

In 1965, 174,000 metric tons (MT) of soybeans were produced across 308,000 hectares, or more than 761,000 acres, with a self-sufficiency rate of 100%. Production area has steadily declined since then, resulting in production of 216,000 MT in 1980, 233,000 MT in 1990, and a much smaller 114,000 MT in 2000.

Production in 2023 stood at 141,000 MT across 67,671 hectares, or 167,200 acres, equivalent to about 65% of the production quantity and 36% of the production area in 1980. Thus, self-sufficient production of food soybeans is no longer possible, raising dependency on imports. Although recent government policies to reduce the rice production area have led to some increases in soybean production as a substitute crop, the impact on soybean production is not likely to be significant.

## IMPORT TRENDS

The average annual import volume of food soybeans in Korea over the past five years is about 290,000 MT. Bulk vessels and containers each account for 50% of the import volume, with all bulk vessel shipments being purchased by the government.

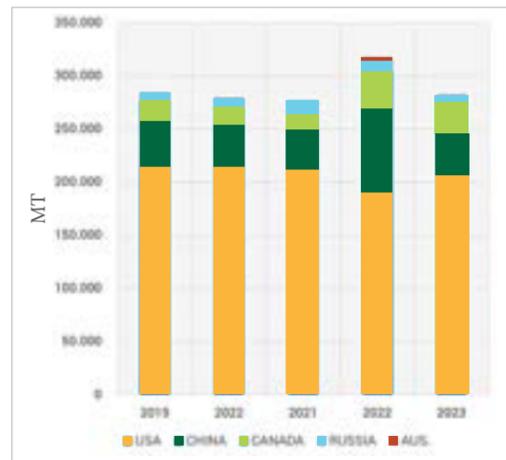
In 2022, imports by Korea grew significantly, but the tight U.S. export availability caused U.S. share of the soybean market in Korea to decline. In 2023, the U.S. share of food soybean imports into Korea recovered to the previous level of 73%.

### Food Soybean Imports

Unit: MT

	2019	2020	2021	2022	2023
USA	213,850	214,771	211,735	189,897	205,779
CHINA	43,599	39,344	37,536	79,256	40,162
CANADA	18,838	16,148	14,463	35,116	29,984
Russia	7,819	8,942	11,981	9,506	6,052
AUS.	213	254	809	4,151	945
Others	37	274	139	353	64
<b>Total</b>	<b>284,356</b>	<b>279,733</b>	<b>276,662</b>	<b>318,279</b>	<b>282,986</b>

Source: Statistics Korea



Source: Statistics Korea

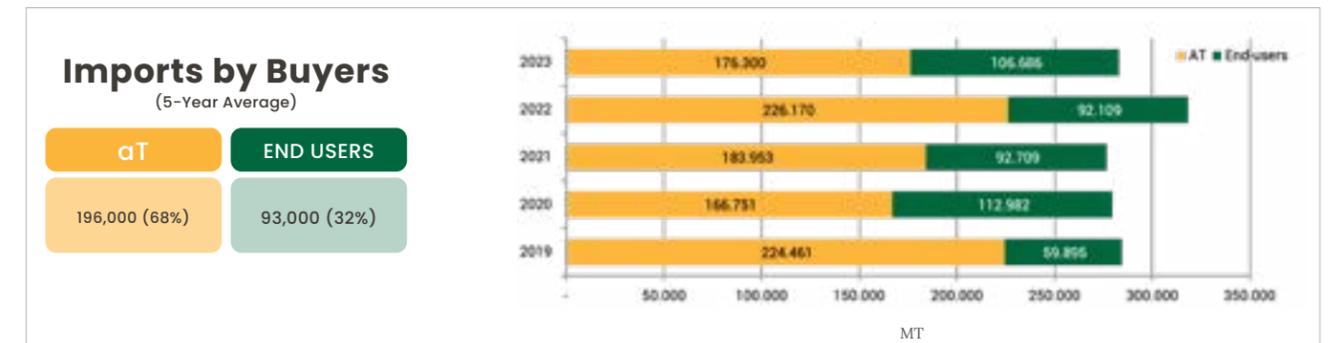
The U.S. had a five-year average market share of 72% within Korea's food soybean market. This makes the U.S. the largest exporter of food soybeans to Korea, followed by China and Canada. In 2022, the U.S. market share fell sharply, as Korean buyers increased purchases from China and Canada due to tight export availability. Over this period, Korea's import of Chinese food soybeans grew by approximately 42,000 MT and Canadian food soybeans by 21,000 MT compared to 2021.



## IMPORT BY BUYER TYPE

Food soybeans imported into Korea are subject to tariff rate quotas (TRQs). The Korean government manages imports through the state trading arm, the Korea Fisheries & Food Trade Corporation, known as aT.

There are two purchasing schemes: direct procurement by the government through aT, and allocation or bids for import rights for food soybean end-users. The government's role is to store and supply the soybeans it purchases, and thereby manage import volume of soy food beans in the domestic market.



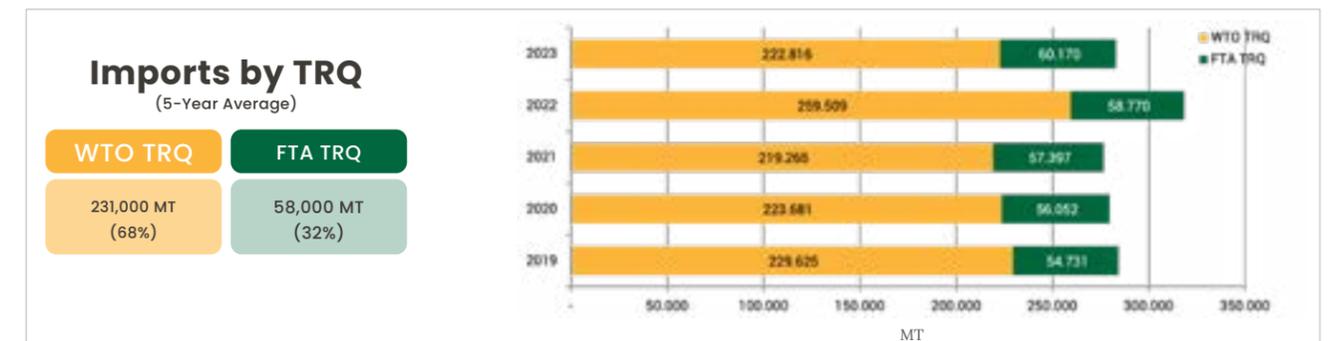
Source: aT & Statistics Korea

## IMPORT BY TARIFF RATE QUOTA

In 2022, import quantities increased due to tight domestic food soybean stocks driven by growth in demand for soybean products.

In 2023, import quantities returned to previous levels as demand weakened due to a slowing economy.

In 2024, food soybean import volumes were expected to be similar to those of the previous year.

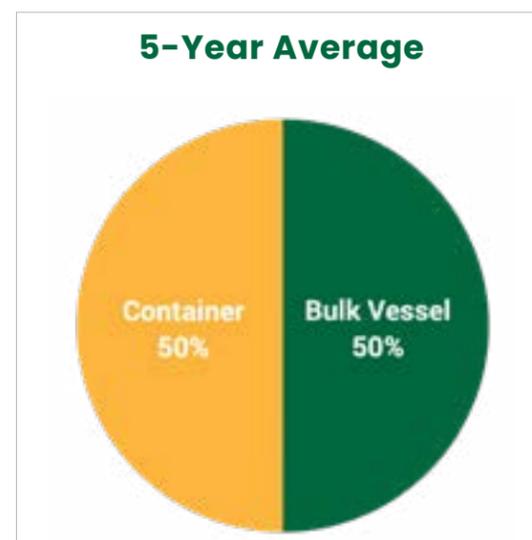
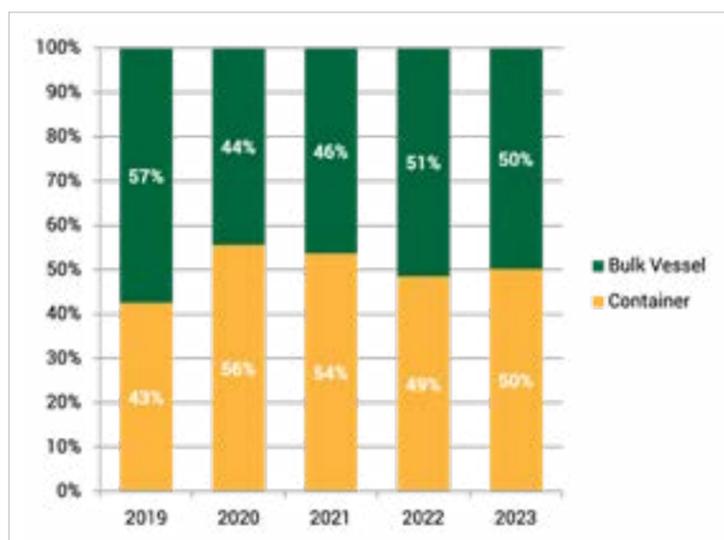


Source: aT & Statistics Korea

### SHIPMENT TYPES

Unit: MT

TYPE	2019	2020	2021	2022	2023	5-Year Avg.	
Bulk Vessel	163,461	124,251	128,250	163,670	141,300	144,186	50%
Container	120,895	155,482	148,412	154,609	141,686	144,217	50%
<b>TOTAL</b>	<b>284,356</b>	<b>279,733</b>	<b>276,662</b>	<b>318,279</b>	<b>282,986</b>	<b>288,403</b>	<b>100%</b>



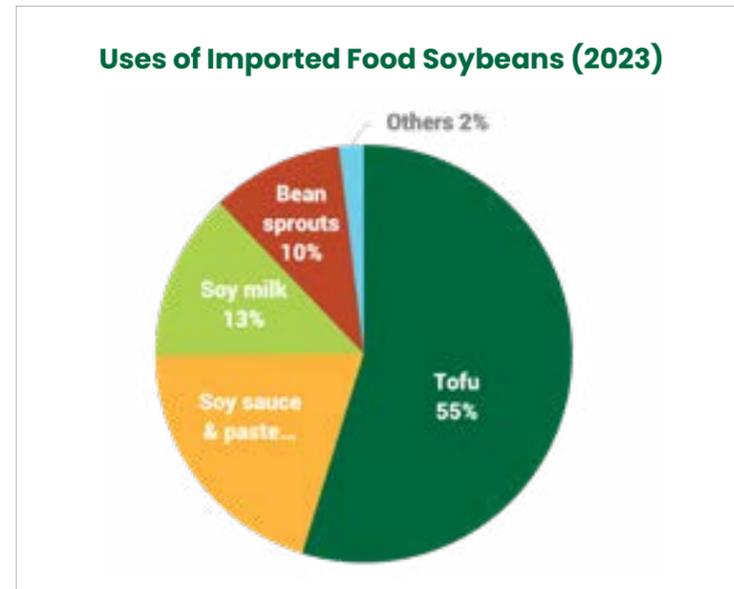
Source: aT & Statistics Korea

In terms of imports by shipment type, bulk vessels and containers each account for 50% of the volume imported. The government imports soybeans through tenders for the lowest price administered two years prior to the year of arrival of the soybeans, with basis payment conditions and solely in bulk vessels.

Food soybean end-users purchase shipments in containers only. The government may also purchase container shipments for some quantities, as a part of its role in managing supply and demand volume.



# Consumption



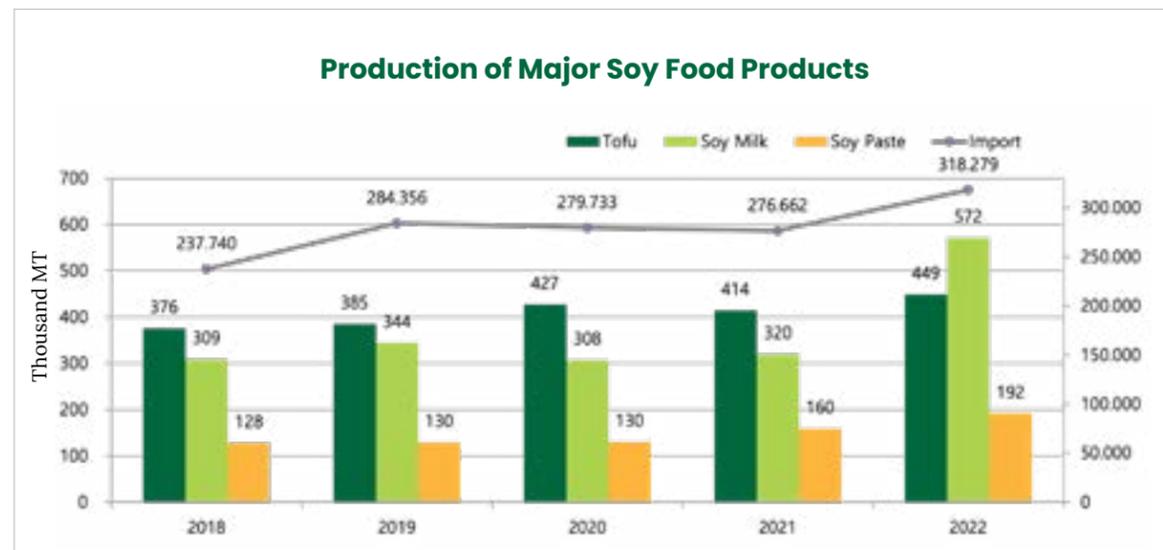
Source: aT



The soy food market grew from 814,000 MT in 2018 to 1,213,000 MT in 2022. Increased demand for soy foods such as tofu, soy milk, and soy sauce and paste resulted in increased soybean imports in 2022.

## SOY FOOD TRENDS

Soybean and soy foods go back thousands of years in Korean history but new trends are emerging. Interest in health and plant-based foods is growing. Demand for tofu, soy milk, soy sauce and paste has increased as home cooking, health management resources (HMR) and delivery food expanded due to COVID-19. The vegan population is also growing. In addition, consumers are showing more interest in plant-based meat such as soy meat.



Source: Korea Ministry of Food and Drug Safety

# Policy

## TARIFFS AND TRADE AGREEMENTS



### TARIFF RATES

<b>5%</b>	<ul style="list-style-type: none"> <li>• Under WRO TRQ</li> <li>• 80% of food soybean imports</li> <li>• Imported by aT (70%) and end-users (10%)</li> </ul>
<b>0%</b>	<ul style="list-style-type: none"> <li>• Under FTA TRQ</li> <li>• 20% of food soybean imports</li> <li>• Imported directly by end-users</li> <li>• aT allocates FTA TRQ to 12 associations of food soybean processors</li> </ul>
<b>487%</b>	<ul style="list-style-type: none"> <li>• Outside TRQ</li> </ul>



### WORLD TRADE ORGANIZATION TARIFF RATE QUOTAS

The Korean government increased voluntary tariff rate quotas (TRQs) in 2022 due to the rising demand for soybeans driving by increased interest in health and plant-based foods, leading to shortages in stock.

Unit: MT

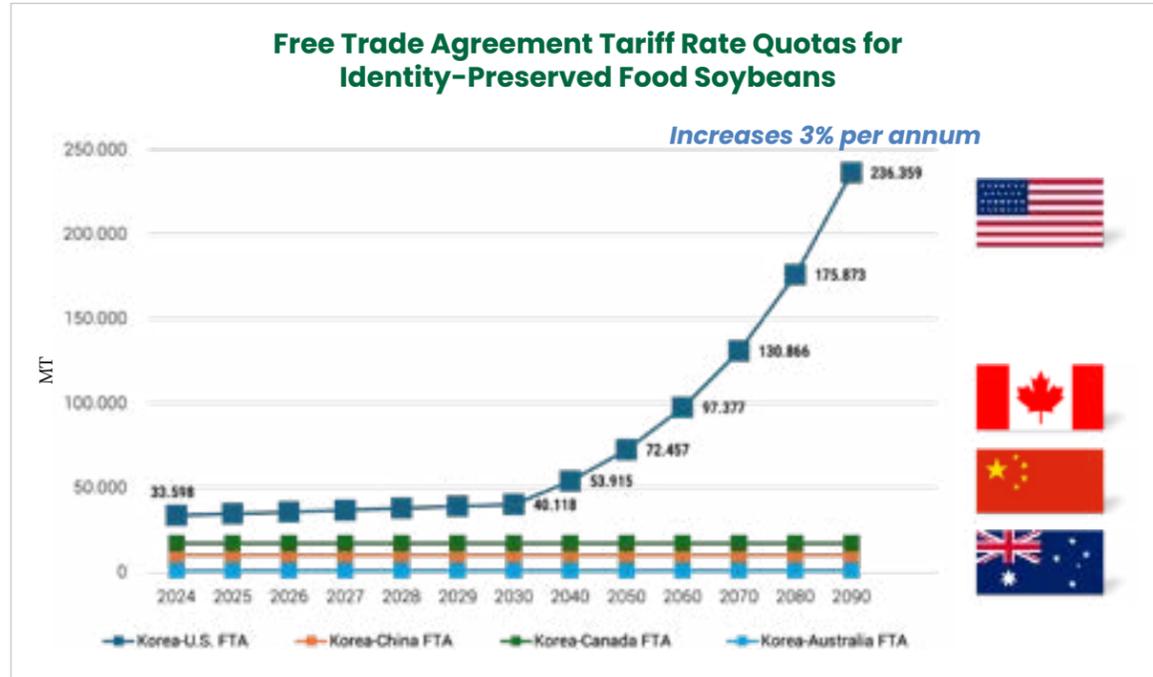
	2019	2020	2021	2022	2023
<b>Country Schedule</b>	185,782	185,782	185,782	185,782	185,782
<b>Voluntary</b>	43,000	41,680	38,335	34,962	97,204

### FREE TRADE AGREEMENT TARIFF RATE QUOTAS

Unit: MT

	2022	2023	2024	2025	2026	Ceiling
<b>USA</b>	31,670	32,670	33,599	34,607	35,645	None
<b>Canada</b>	16,200	16,200	17,000	17,000	17,000	17,000
<b>China</b>	10,000	10,000	10,000	10,000	10,000	10,000
<b>Australia</b>	900	950	1,000	1,000	1,000	1,000

Source: aT and Korea Ministry of Trade, Industry & Energy



Source: Korea Ministry of Trade, Industry & Energy

The Republic of Korea has Free Trade Agreements (FTA) for identity-preserved (IP) soybeans with four countries: the United States, Canada, China and Australia. For Canada, China and Australia, the TRQ remains fixed each year after a certain period. For the U.S., the TRQ increases 3% per annum with no ceiling.

The FTA quota for U.S. food soybeans in 2024, at 33,598 MT, will increase each year to reach 72,457 MT in 2050, 130,866 MT in 2070, and 236,359 MT in 2090, with the total import volume covered entirely through the FTA.



## GENETIC MODIFICATION TOLERANCE

The tolerance threshold in non-GMO food soybeans is 3%.

Description	Cases where GMO labeling is not required
<b>Agricultural Products</b>	<ul style="list-style-type: none"> <li>Identity-preserved agricultural products (up to 3% adventitious presence allowed)</li> </ul>
<b>Processed Foods</b>	<ul style="list-style-type: none"> <li>IP agricultural products used (up to 3% adventitious presence allowed)</li> <li>Content of GMO agricultural products used is not within top 6 (excluding purified water); Genetically modified DNA of foreign protein not remaining in final product (ex. edible oils)</li> </ul>

Source: aT

To strengthen quality control of non-GMO soybeans, aT has amended the GMO threshold to 2% and conducts inspections at the loading port and the discharging port.

## CHEMICAL RESIDUE

On January 1, 2019, Korea implemented the Positive List System (PLS) to all whole agricultural products except pesticides in agricultural products which are registered domestically or scientifically proven to import. A maximum residue limit (MRL) of pesticides that are not listed will follow one standard, which is less than 0.01 ppm.

### CASES APPLYING UNIFORM LIMIT

The MRL of less than 0.01 ppm is applied when pesticides for which no MRLs are established for any food remain in food items. This includes detection of pesticides not registered for domestic use in Korea.

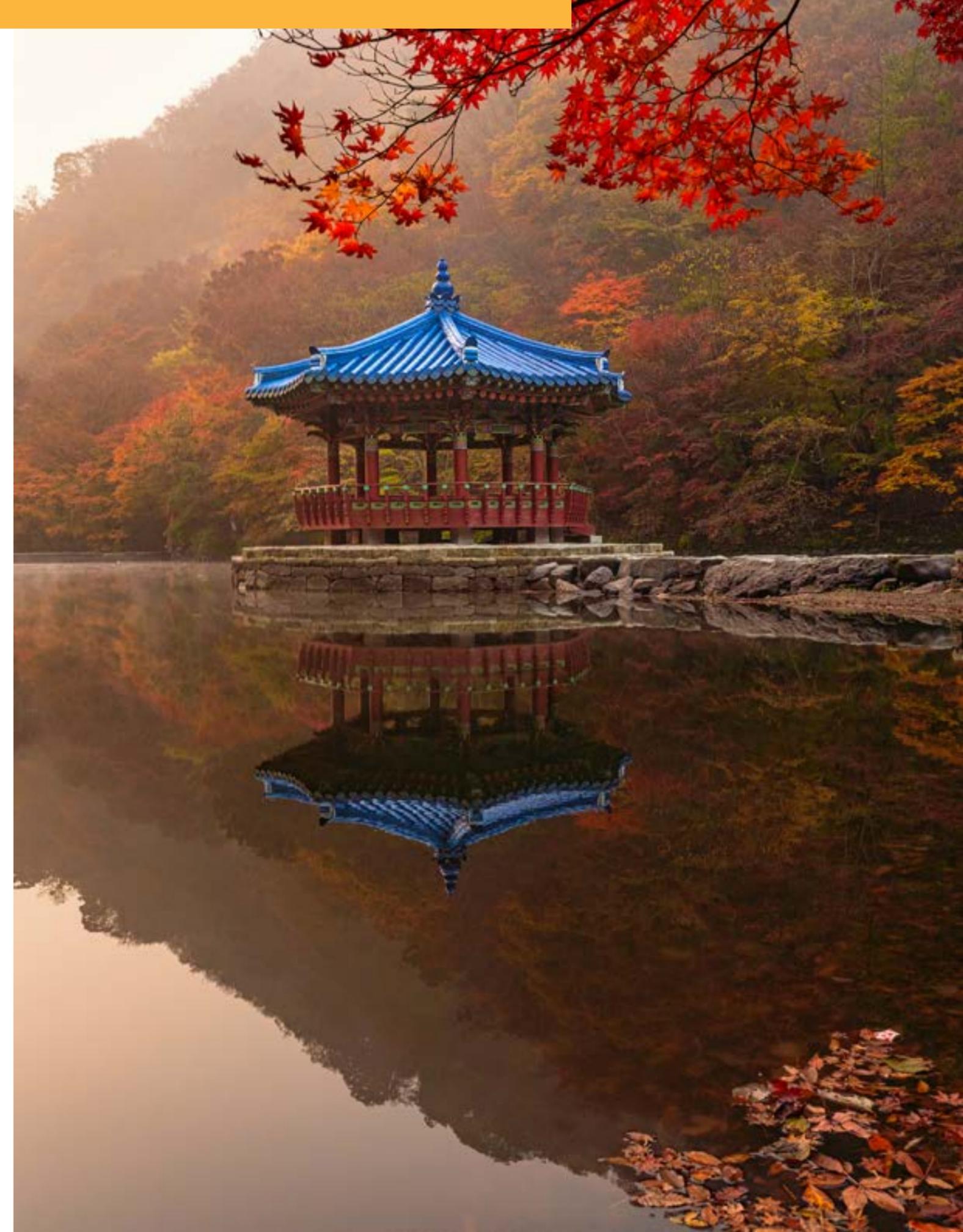
The limit is also applied when pesticides that have MRLs established for some food items appear in other food items. For example, detection of pesticides in soybean food products that only have MRLs established for corn.

### APPLICATION FOR ESTABLISHMENT OF MRLS IN IMPORTED FOOD

In cases of domestically non-registered pesticides that are used in foreign countries and may remain in imported food, a safety assessment is conducted. MRLs for concerned foods are established if they are found to have no adverse health effects.

#### Inspection Standards for Imported Food Beans under the PLS

Description	Inspection Standards
Ministry of Food and Drug Safety (MFDS)	<ul style="list-style-type: none"> <li>Conduct detailed inspections for 113 residual pesticides on imported soybeans.</li> <li>May conduct additional random inspections or inspections for 510 types of pesticides.</li> </ul>
aT purchases	<ul style="list-style-type: none"> <li>Conduct inspections on 510 MRL pesticides to strengthen safety and quality management.</li> <li>When the MFDS notices on inspection standards are revised prior to loading, the revisions shall apply.</li> </ul>

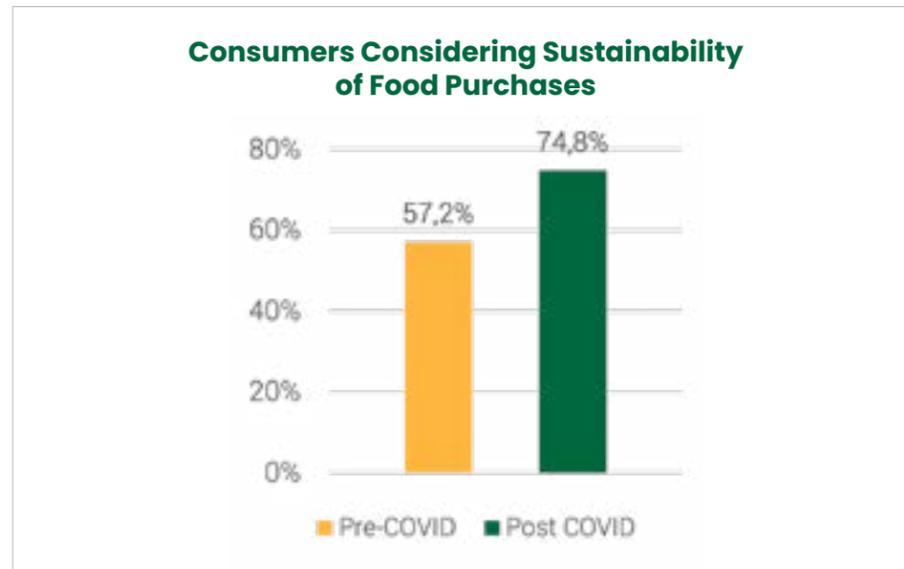


# Sustainability in Korea

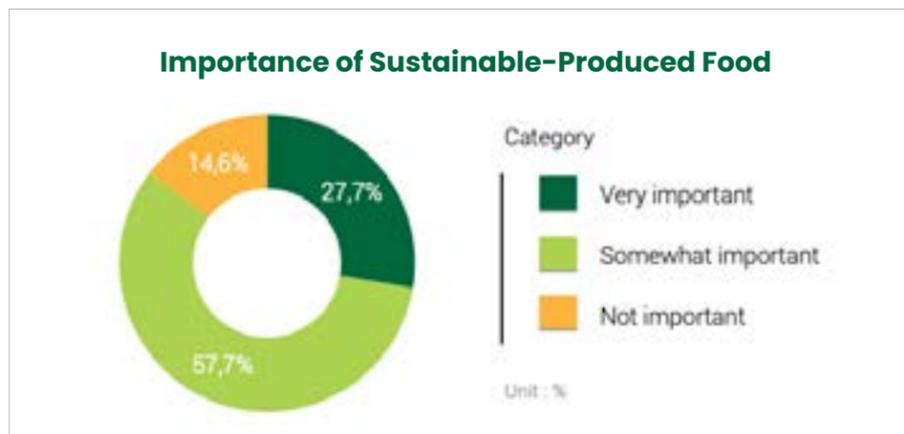
## CONSUMER SUSTAINABILITY TRENDS

Based on a consumer survey in Korea, the number of consumers considering sustainability when purchasing food products increased by 17.6% from 2015 to 2020. A total of 85.4% of the surveyed replied that it is important for their family to consume sustainably-produced products.

The survey asked consumers, “Do you consider sustainability?” in reference to their food purchases. The percentage answering yes increased significantly from 2015, before the COVID-19 pandemic, to 2020.



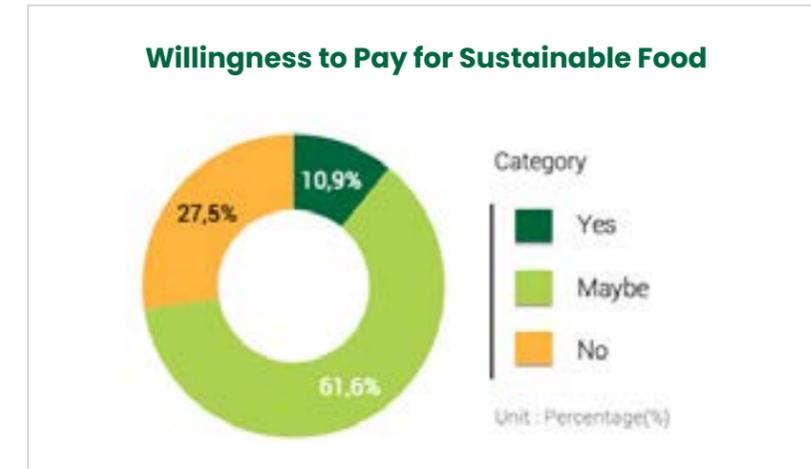
Most survey participants responded that it was very important or somewhat important for their families to consume sustainably-produced food.



Source: Korean Consumer Survey on Sustainability, Gallup, Regional coverage of online survey: Seoul, top 5 cities, 896 people, Period: 2020.8.24-9.1



According to the survey, 72.5% were willing to pay extra for sustainability in food products that they purchase. They replied they would pay a 9.4% to 22% premium for sustainable soy foods, noting that for tofu, which is a more affordable soy product, they would pay up to 100% in premium over non-sustainable tofu.



Source: Korean Consumer Survey on Sustainability, Gallup, Regional coverage of online survey: Seoul, top 5 cities, 896 people, Period: 2020.8.24-9.1

### Price Expectations for Sustainable Soy Food Products

Food Product	MSRP of Non-sustainable Product in the Market	Appropriate Price for Sustainable Product
Vegetable oil (1.8L)	KRW 4,100	KRW 5,000
Tofu (300g)	KRW 1,000	KRW 2,000
Paste (1kg)	KRW 6,700	KRW 7,650
Soy milk (1 box)	KRW 12,800	KRW 14,000

Source: Korean Consumer Survey on Sustainability, Gallup, Regional coverage of online survey: Seoul, top 5 cities, 896 people, Period: 2020.8.24-9.1

## SUSTAINABLE U.S. SOY LOGO APPLICATION

Lotte Foods was the first company in Korea to use the Sustainable U.S. Soy logo on high oleic soybean oil, working to enhance the value of its products by using U.S. Soy.



The logo appears on the front of Lotte Foods' 18-liter high oleic soybean oil product used by restaurants, franchise dining establishments and other B2B channels. On the side of the product is the phrase "Dare to Compare – Sustainability" with the QR code verifying sustainability, used for marketing purposes. The not-for-sale 500-milliliter high oleic soybean oil product also carries the Sustainable U.S. Soy logo.



Sajo Daerim applied the Sustainable U.S. Soy logo on eight types of soybean paste in 2023. They labeled an additional six new products in 2024.

Since adding the Sustainable U.S. Soy logo in 2023, Sajo Daerim's soybean paste sales have increased by 23%.



## U.S. SOY SUSTAINABILITY CAMPAIGN

With the view to communicating to Korean consumers the value, hard work and significance behind Sustainable U.S. Soy, USSEC created a promotional video and key visual materials on sustainability and carried out a campaign in 2021 via major online channels such as YouTube, Naver, Facebook and Instagram, buses and outdoor media.

The campaign slogan was "U.S. Soy provides nutrition for the world. It must be passed on to future generations." A compelling message was delivered through the voice of Jim Douglas, an Indiana farmer who has grown soybeans his entire life by applying sustainable farming practices that preserve the land for future generations.

USSEC is receiving positive feedback from the target audiences in the food and feed industries. Consumer awareness of the sustainability of U.S. Soy is also increasing.

Video Advertisement, Full Story



Display Advertisement, Key Visual



Outdoor media advertising is being carried out in Kangnam and Hongdae areas, the busiest places in Seoul.



Bus advertisements are posted on the commuting routes between downtown Seoul and suburban areas.

## CREDIT: USSEC KOREA AND CONSULTANTS

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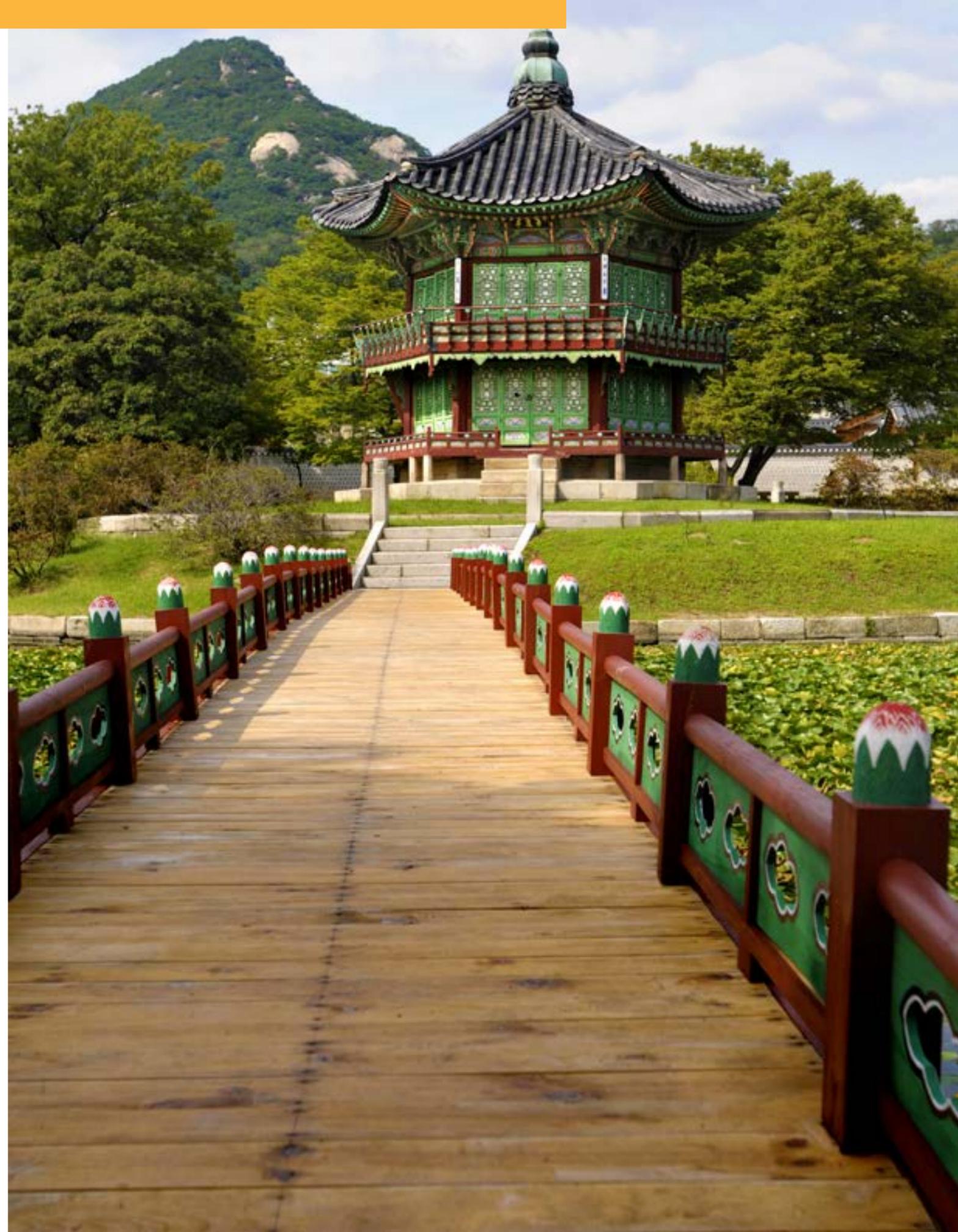
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[Korean Consumer Survey on Sustainability](#)

[Korean Statistical Information Service](#)

[Statistics Korea](#)

USSEC industry insight and feedback





# Malaysia

## SOY FOODS REPORT



# Malaysia

Soy is an important ingredient in Malaysian cuisine. Although the country produces little to no soy domestically, it turns to imports to meet local demand.

Soy products were first introduced to Malaysia in 1676, when soy sauce was ordered from Japan for use in Malacca by Dutch East India Company officers.<sup>1</sup> Additionally, Chinese immigrants introduced tofu, and Indonesian immigrants introduced tempeh from Java. Soy milk is one of the country's most popular drinks, and it was first introduced commercially by Yeo Hiap Seng's Vitabeen brand in 1952. Subsequently, Lam Soon and Nestle began production of soy milk in the 1970s, marking Malaysia's long-standing interest plant-based dairy alternatives.<sup>2</sup>

Today, the soy food and beverage market in Malaysia includes various products such as tofu, tempeh, bean curd skin, *fu jook* or bean curd skin, and soy milk.<sup>3</sup>



Old advertisement of Yeo Hiap Seng, including Vitabeen soy milk  
Source: Pinterest



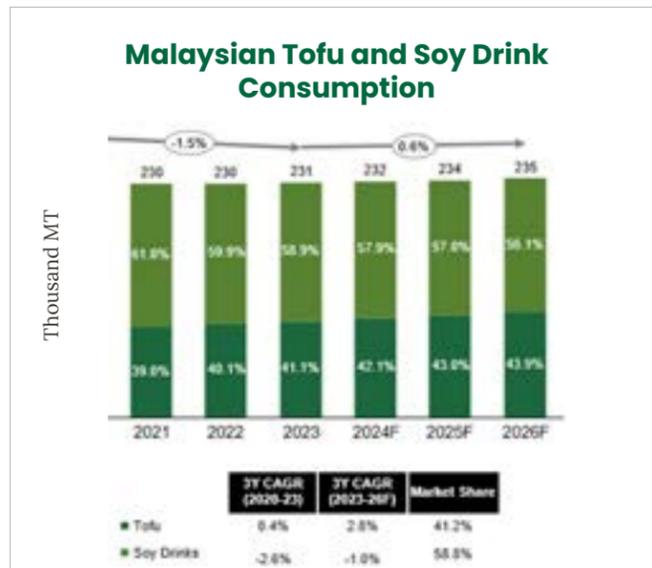


# Consumption

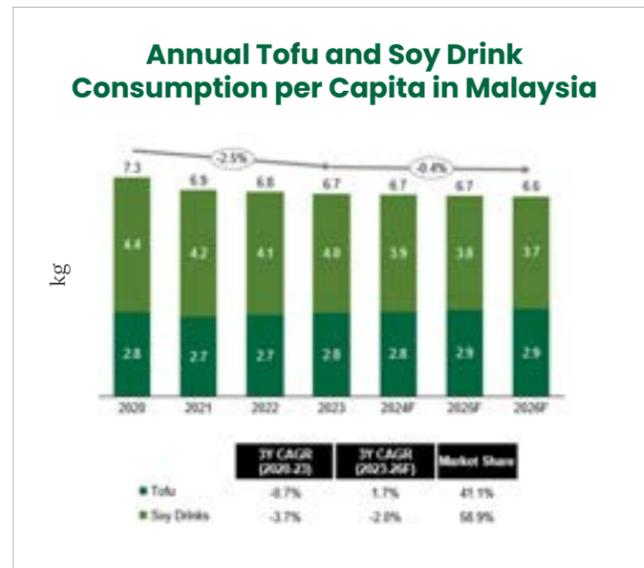
## TOFU AND SOY DRINKS

The forecasted demand for soy food and beverage products in Malaysia is on the rise, driven by factors such as the growing middle class, health-conscious consumers and an increasing awareness of climate change and sustainability issues. This shift in consumer behavior is reflected in the increasing availability and affordability of plant-based food and beverage products in the Malaysian market, making them more accessible to a wider audience.<sup>4</sup>

In 2023, Malaysia consumed 231,000 metric tons of tofu and soy drinks. Out of this volume, 41.1% was consumption of tofu and its derivatives, while 58.9% was soy drinks. From 2020 to 2023, total consumption dropped from 242,000 MT to 231,000 MT at a three-year compound annual growth rate of -1.5%. However, consumption is expected to increase as combined tofu and soy drink demand is forecasted to reach 235,000 MT in 2026, at a growth rate of 0.6% from 2023 to 2026. By 2026, tofu is expected to comprise 43.9% of the market share, while soy drinks are expected to make up 56.1%.<sup>5</sup>



Source: Euromonitor and Y&S Analysis



Source: Euromonitor and Y&S Analysis



## TOFU AND DERIVATIVES

In 2023, Malaysia consumed 95,100 MT of tofu, which was an increase of 0.4% over three years from 94,100 MT in 2020. Tofu consumption is expected to continue increasing at a three-year compound annual growth rate of 2.8% from 2023 to 2026, reaching a projected 103,200 MT in 2026.<sup>6</sup>

Consumption of tofu in Malaysia prevails due to its significance in various Malaysian cuisine. Tofu is common in Malaysian Chinese dishes, and it is part of Malaysian Indian cuisine as well, being used in dishes such as Indian *mee goreng* and *rojak pasembor*.

Further, several trends play a part in this growth – the rise of veganism and the premiumization of diets where consumers seek gluten-free and low-carb foods.<sup>7</sup> The per capita consumption forecast between 2023 and 2026 supports this trend, as it is expected to grow 1.7% to 2.9 kilograms (6.4 pounds) per capita by 2026.<sup>8</sup>

## SOY DRINKS

Soy drink consumption was at 136,100 MT in 2023, accounting for 58.9% of the soy food and beverage market share. While soy drink consumption is larger than tofu, the consumption dropped -2.6% between 2020 and 2023. It is expected to drop further to 132,000 MT in 2026. Similarly, per capita consumption is expected to fall -0.4% from 2023 to 2026 to 3.7 kg (8.2 pounds) per capita.<sup>9</sup> This is because other plant-based milks, such as oat milk and almond milk, are gaining traction among Malaysian consumers.

Despite this, soy milk remains the most popular plant-based milk in Malaysia.<sup>10</sup> It is widely available in grocery stores and coffee shops, and it is even sold by traditional street vendors as *Tau Fu Fa*, which is commonly consumed to cool off in Malaysia's tropical climate. Malaysia's soy drink consumption per capita is also among the highest in the region, second only to Thailand's 5.8 kg (12.8 pounds) per capita.<sup>11</sup>

Despite its growing demand and ubiquitous presence in Indonesia, soy drink consumption is lower compared to regional peers, at 0.4 liters (13.5 ounces) per capita annually, demonstrating significant room for growth in this product segment.<sup>12</sup>



Street side vendor selling soybean in Malaysia  
Source: YouTube (Anytime Street Food)

## PLANT-BASED MEAT

Plant-based meat is slowly gaining traction in Malaysia. Even vegetarian restaurants have a majority non-vegetarian customer base, such as The Hungry Tapir in Kuala Lumpur, where 80% of its customers are not practicing vegetarianism or veganism.<sup>12</sup> This shows the growing popularity of plant-based foods, with an estimated 46.4% of Malaysians having tried plant-based meats.<sup>13</sup>

The growing interest in meat alternatives is due to several factors. These elements include a growing middle class and flexitarian diets, as well as the importance of health and well-being. Despite doubts surrounding the taste and texture of plant-based meat, consumers are still willing to try these alternatives in consideration of climate change and sustainability.<sup>14</sup> Additionally, large restaurant chains such as IKEA and Kentucky Fried Chicken have started offering plant-based alternatives, exposing these products to a wider audience.<sup>15</sup>

### Plant-based Menu

Small changes that you make today will have a big impact on yourself and the planet tomorrow. Our plant-based menu is meatless but tasty!

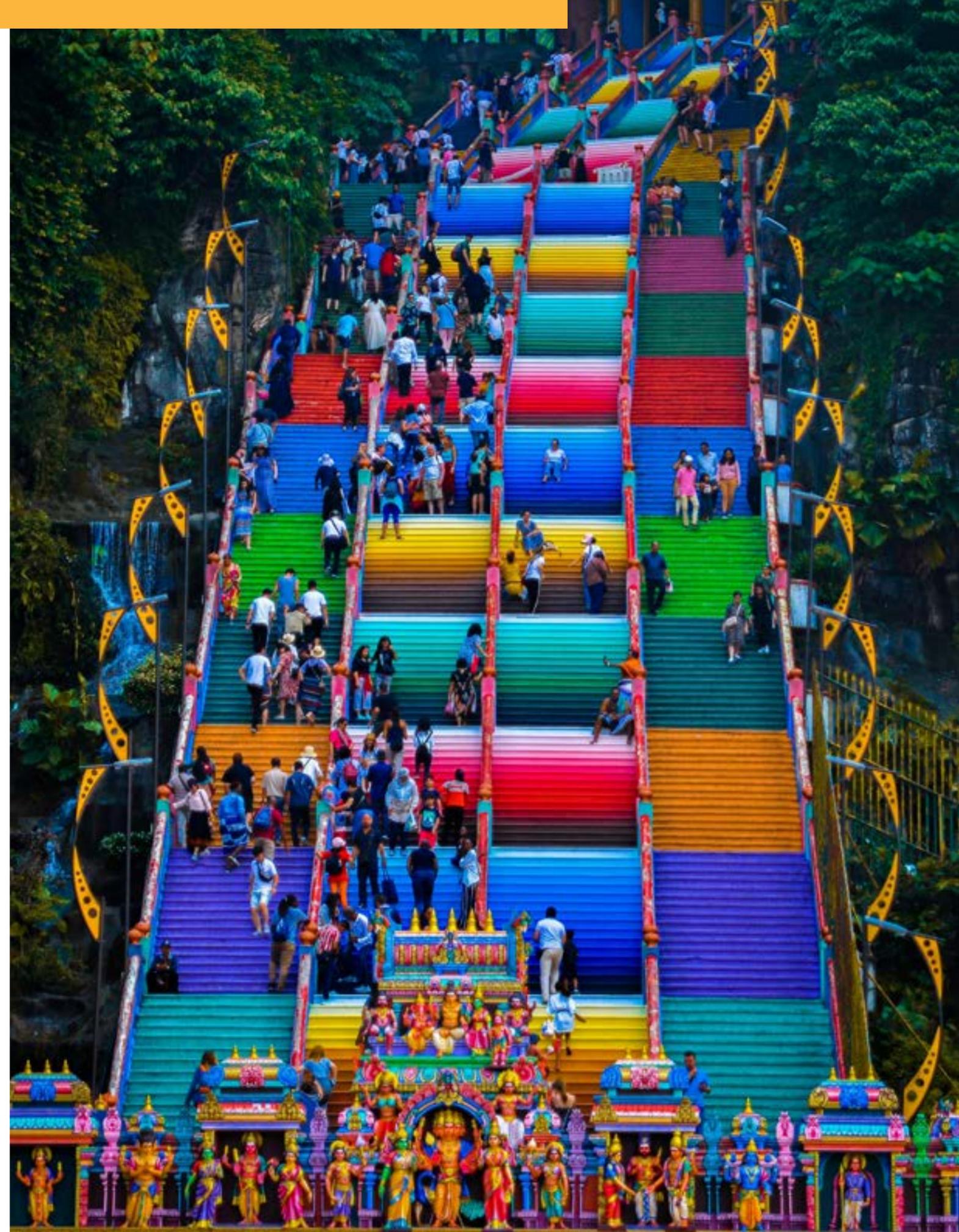
**A plant ball made with pea protein, oats, potatoes, apples and onion, but has the look, taste and juicy bite of a meatball.**

8pcs Plant Ball  
with Mashed Potato & Broccoli  
RM9.90

[Find out more](#)



IKEA's plant-based menu.  
Source: IKEA Malaysia





## Sustainable Food Trends

Consumers in Malaysia are increasingly moving towards sustainable practices, which explains continued interest in soy food and beverage products. A survey by Rakuten revealed that 18% of Malaysians have reduced their meat consumption, 22% have chosen organic or sustainably produced food items and 25% have chosen producers with known environmentally sustainable practices and values.<sup>16</sup> Additionally, 80% of Malaysians are likely to spend more on sustainable foods, beverages and groceries.<sup>17</sup> This creates opportunity for soybean demand as consumers' preference towards sustainable products may lead them to choose soy foods and beverages.

Producers in Malaysia are also paying more attention to sustainability. F&N, one of Malaysia's largest food and beverage producers, has set sustainability performance targets to be met by 2025. One of their targets is to have 100% of their suppliers comply with F&N Group's Supplier Code of Practice, where suppliers should not develop in ecologically sensitive areas and are expected to rehabilitate areas where deforestation has occurred for agricultural land development.<sup>18</sup> By 2021, F&N achieved 66% of this goal.<sup>19</sup>

Ayam, one of Malaysia's top foods manufacturers that also produces plant-based meats, has committed to only purchasing palm oil from suppliers who are certified as Roundtable on Sustainable Palm Oil, or RSPO, Segregated.<sup>20</sup> The continued commitment towards sustainability may lead these companies to source other sustainable ingredients, such as U.S. Soy.



# Soy Foods and Beverages Production

The soy drink market in Malaysia is dominated by large manufacturers such as F&N, Yeo Hiap Seng and Lam Soon Group. On the other hand, while tofu production is mostly controlled by large companies such as Syarikat Perniagaan Cheong Fatt, some tempeh and tofu production in Malaysia also come from small-medium enterprises. It is estimated that 60% to 70% of imported soybeans go to these smaller producers.<sup>21</sup> As for plant-based meat, the market is primarily dominated by multinational companies with significant research and development capital.

## TOFU AND DERIATIVES

The largest tofu producer in Malaysia is Syarikat Perniagaan Cheong Fatt (CF), claiming 70.7% of the retail market.<sup>22</sup> It domestically produces tofu products such as Japanese tofu, smooth tofu and fried tofu. Tung Lam Food Industries – in second place with 14.1% of the retail market – owns the brand Sakura, which domestically produces silken and egg tofu in boxes and tubes.<sup>23</sup> Tempeh and bean curd skin are also prominent soy food products Malaysia, though not as popular as tofu.



Cheong Fatt's Smooth Tofu in a 300g box. Source: Cheong Fatt

## SOY DRINKS

The largest soy drink producer in Malaysia is F&N, with 23% of the retail market share.<sup>24</sup> It domestically produces the soy drink brand Seasons using first grade Non-GMO soybeans.<sup>25</sup> Lam Soon Group is the second largest soy milk producer in Malaysia, claiming 22.2% of the market, with brands such as Drinho (12.3%), Homesoy (7.2%) and Soyfresh (2.7%).<sup>26</sup> Lam Soon's Homesoy has several soy milk flavors aside from original, including honey melon, brown sugar and multigrain, which come in multiple sizes. Lam Soon's Soyfresh also has a variety of flavors like chocolate, cappuccino, strawberry and malt, in a variety of sizes.

According to Euromonitor, many manufacturers faced a hike in production and operational costs in 2022 and 2023 due to rising freight charges, minimum wage, packing and raw material costs and labor shortages. Producers were struggling to maintain stable prices amidst these inflationary pressures that consumers also faced.<sup>27</sup> However, the stabilizing global soy price is expected to ease these pressures.



## Soy Milk Production



Drinho's soy milk Source: Drinho



Source: YSL Food

## PLANT-BASED MEAT

Plant-based meat production in Malaysia is dominated by large manufacturers such as Ayam, Charoen Pokphand (CP) and Nestle. Ayam's plant-based meat brand, YuMeat, domestically produces luncheon meat and minced meat products using non-GMO soybeans and mushrooms. YuMeat directly targets retail consumers and is currently marketed in multiple countries such as Singapore, Australia, Hong Kong and Thailand.

Nestle also runs a production facility in Malaysia that focuses on manufacturing plant-based meat under the brand the Harvest Gourmet. Harvest Gourmet targets both retail consumers and food service customers, with product range such as cutlets, burgers, nuggets and puff pastries using various plant ingredients including soy. The production facility in Selangor was opened in 2021 and is equipped to produce 8,000 MT of food annually. Malaysia was chosen for Nestle's production facility due to the increasing interest in plant-based alternatives among local consumers.<sup>28</sup>



Harvest Gourmet's plant-based products. Source: Shopee Malaysia (Harvest Gourmet)

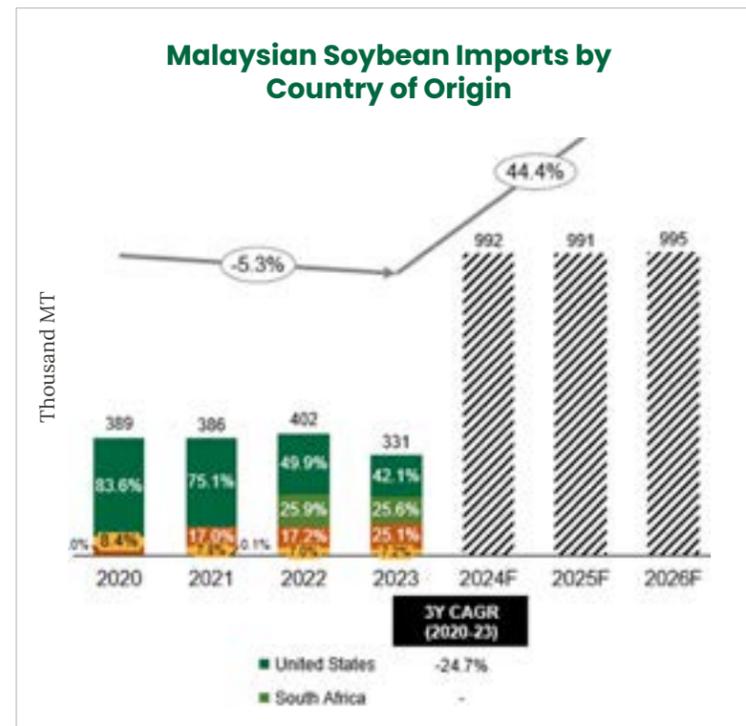
# Soy Supply Chain

## SOYBEAN SUPPLY: IMPORT AND LOCAL PRODUCTION

Malaysia does not cultivate soybeans commercially and relies heavily on imports to meet its domestic demand. Approximately 20% of imported soybeans are used in food production for soy beverages, tofu and tofu derivatives production, while the rest goes to the feed industry, particularly the poultry sector.<sup>29</sup>

In 2023, Malaysia imported 331,000 MT of soybeans, of which 42.1% originated from the United States. The import volume fell -5.3% since 2020, and the U.S. as a country of origin was hit the hardest, as the volume fell -24.7%. Despite falling import volumes in recent years, soybean imports in Malaysia are expected to grow 44.4% to 995,000 MT in 2026.<sup>30</sup> This growth is attributed to Malaysia's growing population and changing dietary preferences towards protein-rich, soy-based products.<sup>31</sup>

Malaysia's soybean import demand primarily comes from large food producers. The largest soybean importer and supplier in Malaysia is Ace Canning Corporation – part of Lam Soon Group that owns HomeSoy, Drinho and Soyfresh brands – accounting for 452 shipments in 2023.<sup>32</sup>



Source: GTA and OECD



Penang Port  
Source: Penang Port Website

## SUPPLY CHAIN AND LOGISTICS

Soybean imports are mostly received in the Peninsular Malaysia region, which has several major ports that handle both import and export containers, including Penang, Johor and Klang.

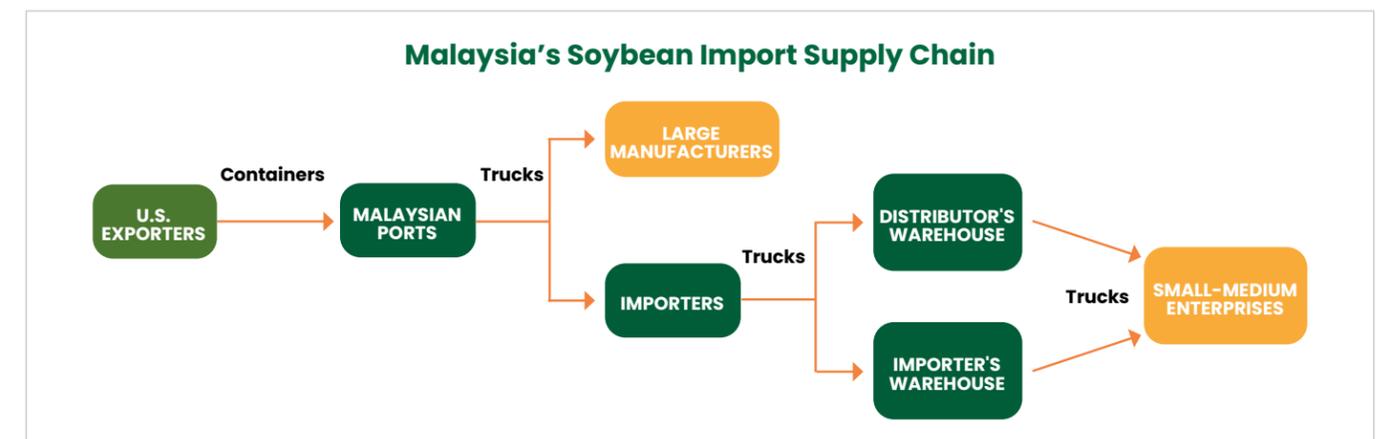
Soybeans originating from the U.S. are mostly shipped using containers to Klang and Penang ports. There are four grades of soybeans imported by Malaysia and only Grade 1 soybeans are used for food production.

The cleaning of soybeans may be done in the U.S. or Malaysia, depending on buyer and importer needs. U.S. soybean exported in bags, either 25 kg (55 pounds) or 0.5 MT, are usually pre-cleaned in the U.S., while soybeans shipped in containers are usually cleaned in Malaysia.

Upon port arrival, it normally takes a few days to a week for soybean imports to clear customs.

While Malaysia does not require quarantine for all soybean import, the authorities may conduct random spot checks. Following custom clearance, it usually takes a day for the imported soybean to be transported directly to manufacturers or the importer's warehouse. In the warehouses, bulk soybeans are typically stored in silos or flat storages, while bagged soybeans continue to be stored in paper bags. All follow the first-in-first-out system.

Large manufacturers such as Ace Canning, F&N and Yeo Hiap Seng import soybeans directly. Direct-to-manufacturer import makes up approximately 40% of U.S. Soy imports in Malaysia.<sup>33</sup> Manufacturer customers vary in their soybean requirements, as their production facilities differ. Some may require soybean to be pre-cleaned in the U.S., while others do the cleaning process in-house or contract a third-party to clean the soybeans. The U.S. soybean buyers that purchase through distributors or importers are usually small-medium enterprise tofu and tempeh manufacturers.



Source: USSEC Malaysia Representative, Y&S



# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

In order for soybean imports to enter Malaysia, importers need an import permit and a phytosanitary certificate as governed by the Quarantine and Inspection Services Department, Jabatan Perkhidmatan Kuarantin dan Pemeriksaan Malaysia or MAQIS, of Malaysia’s Ministry of Agriculture and Food Security.<sup>34</sup> Beyond that, no import quota nor tariff is required for soybean imports. Customs agents, also known as customs brokers, play an important role in preparing import documentation, advising on duties and arranging delivery for importers.<sup>35</sup>

### IMPORT AND TRANSPORT OF GENETICALLY MODIFIED SOYBEAN

Malaysia’s Biosafety Act<sup>36</sup> governs all GM imports, including soybeans. The regulation requires clear labeling of GM products from the import process to the marketing of the product. GM imports must also be checked for any potential harm to humans, animals and the ecosystem.

The transportation of GM soybeans must be secure to prevent any accidental spillage or release into the environment. If such were to occur, the spill must be collected and cleaned immediately.<sup>37</sup>

Out of all soybean imports, 40% are non-GM soybeans and 60% are GM soybeans.<sup>38</sup>

As of March 2024, Malaysia has approved 46 GM products for market release for use in food, feed, and processing. That includes three for canola, 20 for corn, six for cotton, three for potatoes and 16 for soybeans.<sup>39</sup>

## LABELING

### NUTRITIONAL LABELING

All soy food and beverage products need to have nutritional labeling in Malaysia to help consumers make informed choices. Products manufactured in Malaysia should be labeled in Bahasa Malaysia and any other languages, while imported food and beverage products can be labeled in either Bahasa Malaysia or English and any other language. Labels are required to include the following information.<sup>40</sup>

1. Description of the food, including indication of pork or alcohol
2. List of ingredients
3. Allergens, such as nuts including soybeans, gluten, fish, milk or egg
4. Quantity of food
5. Company information, including producer, importer and country of origin
6. GM labeling



### Malaysia's Healthier Choice Symbol Requirements

Product	Fat (100g/ml)	Total Sugar (100g/ml)	Calcium (100g/ml)	Probiotic	Protein (100g/ml)	Additional Criteria (100g/ml)
Soybean Milk (Susu Kacang Soya)	-	≤ 5g	≥ 60mg	-	≥ 2.5g	Vitamin B2 Vitamin B9 Vitamin B12 Vitamin D

Source: Malaysia’s Ministry of Health

Additionally, nutritional benefit claims — such as the words “compound,” “medicated,” “tonic,” or “health”— are not allowed. Foods are only considered nutritious if they contain nutrients, such as carbohydrates, fats, proteins, vitamins and minerals, energy of more than 40 calories per 100 grams, protein of more than 5 g per 100 g, at least four minerals, and declares all nutrient amounts.<sup>41</sup>

The Healthier Choice Symbol (HCL) was launched in 2017 to promote healthy eating and active living in Malaysia by providing point-of-sale information to the consumers in making informed food choices. Food products may carry the HCL if they meet the nutrient criteria specified by the Ministry of Health Malaysia. For example, soy milk products that are eligible for the HCL must meet the following criteria in the chart.<sup>42</sup>

To get the HCL certification, manufacturers must provide a Certificate of Analysis of Products during the application. Laboratories used in the certification process have to be accredited and recognized by the Department of Standard Malaysia under the *Skim Akreditasi Makmal Malaysia*. HCL approval is valid for two years, and during that time the products may be randomly selected for analysis.<sup>43</sup>



Yeo’s Soy Immuno Drink with Healthier Choice logo. Source: Yeo’s Website and Healthier Choice Logo Website

## ALLERGEN AND HALAL LABELING

If the food contains allergen ingredients known to cause hypersensitivity – soy, nuts, fish, milk or egg – the ingredients must be declared on the label.<sup>44</sup>

Additionally, as a Muslim country Malaysia has halal certification and labeling requirements,<sup>45</sup> which are relevant for soy food and beverage products.<sup>46</sup> Halal products are those which do not:<sup>47</sup>

1. Come from or contain any part or item from animals or substances forbidden to Muslims by Islamic law.
2. In preparation, processing or storage stage, come in contact with any food that do not meet requirements in (1).

Any product that has been halal-certified needs to have the Malaysia Halal Logo (MHL) printed prominently in its packaging. The MHL logo needs to be accompanied with the Malaysia Standard number and the file reference number. Halal certification is governed by MS1500: 2009 Halal Food General Guidelines, Food Act 1983, National Fatwa Council for Islamic Affairs or Fatwa, and other related guidelines and regulations.<sup>48</sup>

## GENETICALLY MODIFIED FOOD LABELING

As previously mentioned, Malaysia enforces labeling for GM products since July 2014. GM labeling should be stated as “genetically modified (name of ingredient),” “produced from genetically modified (name of ingredient)” or “gene derived from (name of animal).” If it is a single GM-ingredient food, the same phrases can be used to describe it, and they must appear in a principal display panel. Labeling of GM products or ingredients should not be smaller than font size 10.<sup>49</sup> However, GM labeling is exempted for products with GM content of less than 3% of the ingredients.



Halal Labeling (bottom left) on Sakura's silken tofu packaging.  
Source: AEON and HalalSpy



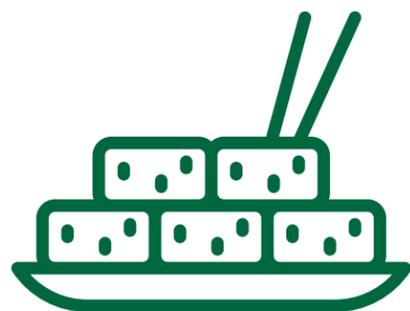
Non-GMO soybean labeling on Tung Lam's Silken Tofu.  
Source: AEON



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# Philippines

## SOY FOODS REPORT



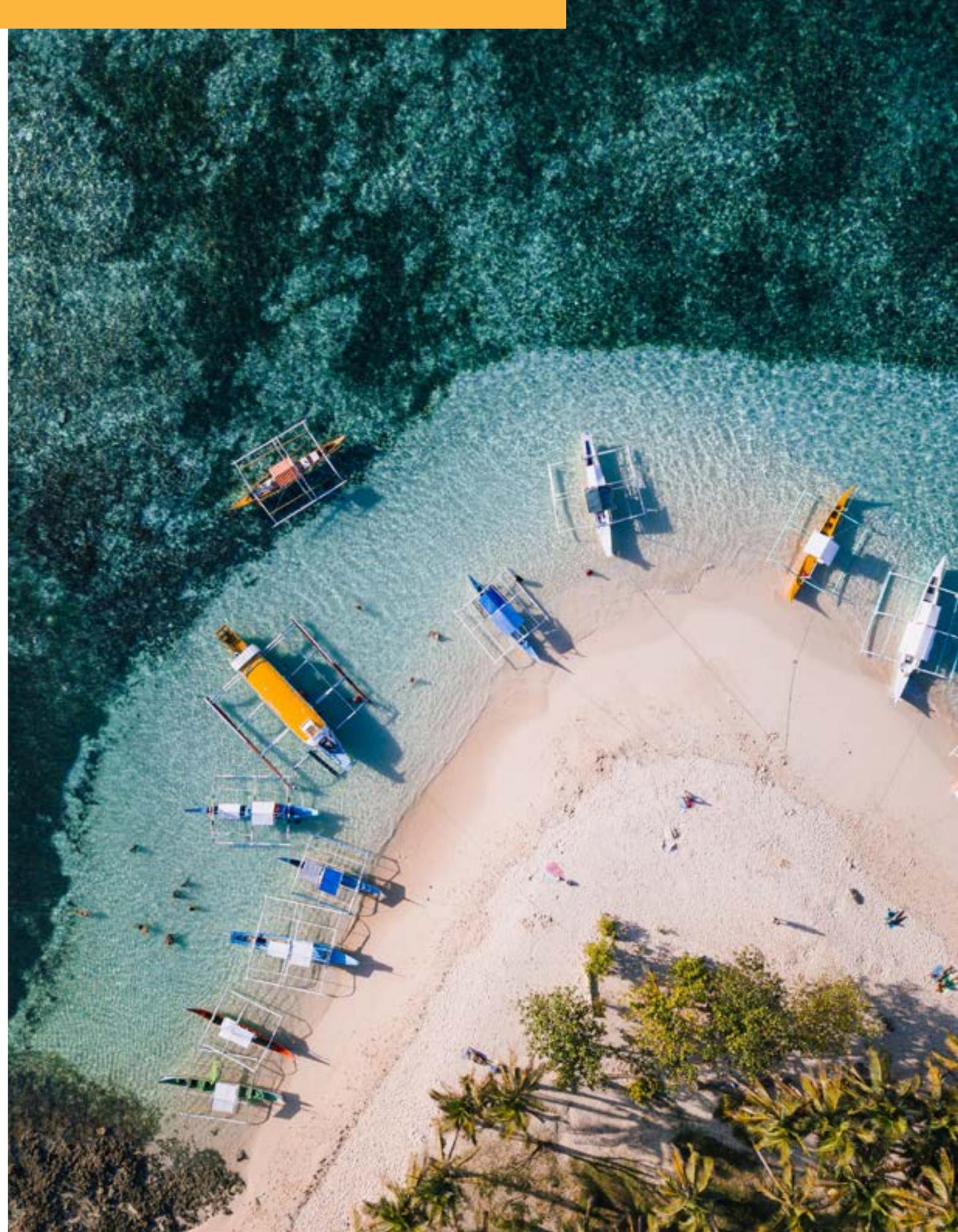
# Philippines

In the Philippines, soy-based foods and beverages hold significant cultural and dietary importance, reflecting both culinary tradition and evolving consumer preferences. Soy's versatility extends to various culinary applications — it can be a standalone beverage or an ingredient in smoothies, desserts and savory dishes. Soy milk, a popular alternative to dairy, has gained traction among health-conscious people in the Philippines seeking lactose-free options and those adopting plant-based diets. The growing interest in plant-based diets has increased the demand for soy-based meat alternatives like tofu and tempeh, which are integral components of Filipino cuisine.

Tofu, known locally as *tokwa*, is a staple protein source in Filipino households, used prominently in dishes such as *tokwa't baboy*, or tofu and pork,<sup>1</sup> and *tofu sisig*, which is tofu mixed with spicy peppers.<sup>2</sup> Tofu can be traced back to Chinese influence, when there was a mass migration from South China to Southeast Asia. There, tofu started intermixing with Filipino culture and became an integral part of Filipino cuisine.



Tokwa't Baboy, a typical Philippine appetizer  
Source: Yummy Kitchen





# Consumption

## TOFU AND SOY DRINKS

Total consumption volume of tofu-related foods in the Philippines is growing, reflecting their importance as sources of protein, enduring popularity and people’s changing dietary habits. Tofu makes up 69.1% of total consumption of tofu and soy drinks. In 2023, the Philippines consumed 62,000 metric tons of tofu-related foods, an increase of 5.6% from 2020, according to the three-year compound annual growth rate. Projections indicate that this upward trajectory will continue, with an expected growth rate of 4.9% from 2023 to 2026.<sup>3</sup> This increase is attributed to the affordability and nutritional benefits of tokwa,<sup>4</sup> especially when the Philippines’ inflation rates continue to rise.<sup>5</sup>

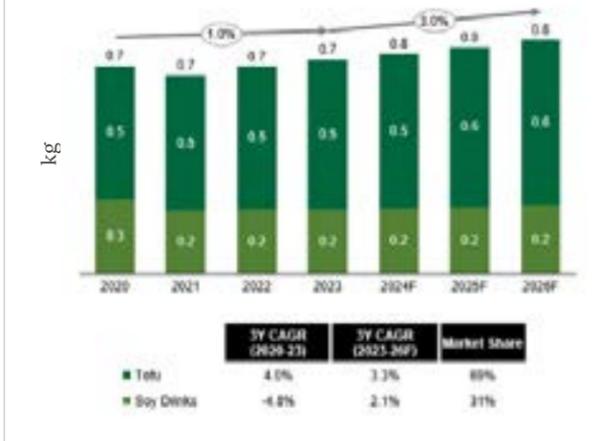


Soy drinks are gaining traction among Filipinos, although their consumption volume is still lower than that of tofu-related foods. In 2023, the Philippines consumed 26,000 MT of soy drinks after experiencing a modest decline of -3.4% from 2020 to 2023 due to the COVID-19 pandemic.<sup>6</sup> The pandemic led to decreased impulse purchases through convenience stores, which caused a drop in retail volume.<sup>7</sup> However, the outlook is optimistic, with soy drinks consumption projected to rebound and grow by a three-year compound annual growth rate of 3.7% from 2023 to 2026.<sup>8</sup>

This trend mirrors a broader rise in plant-based milk alternatives, driven by increased availability through e-commerce and small-scale entrepreneurs. The expansion of AB Nutribev Inc.’s Vitasoy, one of Philippines’ top soy drink producers, into almond and oat milk highlights the growth potential in this market and the growing consumer interest in additional options. This suggests a promising future for plant-based beverages, including soy drinks, in the Philippines.<sup>9</sup>

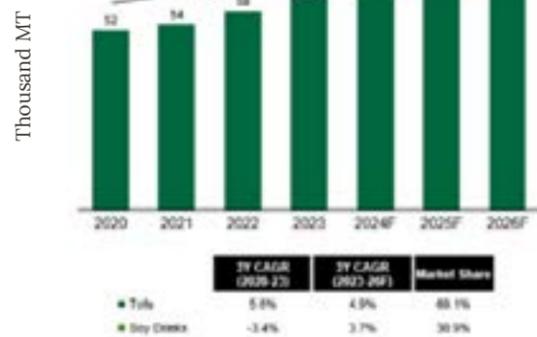
Per capita consumption of tofu and soy drinks in the Philippines was 0.5 kg (1.1 pounds) and 0.2 kg (7 ounces), respectively. It grew and at three-year compound annual growth rate of 1% from 2020 to 2023. However, it is forecasted to grow at a much faster rate of 3% from 2023 to 2026.<sup>10</sup> The increasing popularity among Gen Z and Millennials for a healthy lifestyle is one of the common reasons for this rising consumption trend.<sup>11</sup>

### Annual Tofu and Soy Drink Consumption per Capita in the Philippines



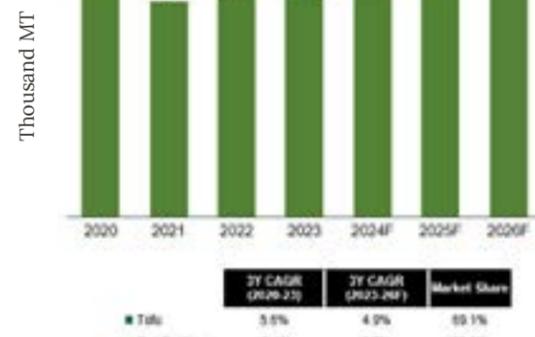
Source: Euromonitor (2024)

### Philippine Tofu Consumption



Source: Euromonitor, 2024

### Philippine Soy Drink Consumption



Source: Euromonitor, 2024

## PLANT-BASED MEAT

Plant-based meat is also growing in the Philippines because of shifting food preferences, coupled with increasing environmental and ethical attitudes regarding traditional protein production methods. While the Philippines currently trails behind Malaysia, Indonesia, South Korea, Japan and China in plant-based meat consumption at 59,000 MT,<sup>12</sup> rising investments in alternative protein companies suggest a growing interest among consumers for plant-based meat. Additionally, Filipino cuisine already offers a variety of traditional plant-based dishes.<sup>13</sup>



# Sustainability

Filipinos are increasingly embracing sustainable food options, driven by considerations of health benefits, environmental impact and animal welfare. Plant-based meats and soy milk offer low saturated fat, high fiber and reduced foodborne illness risk. Environmentally, they generate less greenhouse gas, use less water and conserve land compared to traditional products.

According to a report by Rakuten Insights, 18% of respondents have adopted the sustainable practice of purchasing more seasonal produce, 21% have reduced their consumption of meat and animal products and 32% have chosen organically or sustainably produced food items.<sup>14</sup>

Alongside consumers, producers in the Philippines are also prioritizing sustainability.

- Vitasoy, a soy-based food and beverage producer in the Philippines, has introduced “Vitasoy Nutrition Criteria” to guide product development and reformulation. By 2025/26, they aim for 100% front-of-pack nutrition labels and zero manufacturing waste to landfills.<sup>15</sup>
- Nestlé Philippines, a prominent food and beverage producer in Philippines, and the Philippines Department of Science and Technology have collaborated and committed to integrating biodegradable and compostable packaging materials.<sup>16</sup>
- WTH Foods, a local food processor, sources ingredients strategically to support small-scale farmers practicing sustainable agriculture.<sup>17</sup>

These highlight the significance of sustainability in producer business practices, potentially creating opportunities for sourcing sustainable soy in the future.

Major players in the food industry, such as Monde Nissin Corporation<sup>18</sup> and Century Pacific Foods,<sup>19</sup> are investing in sustainable practices and expanding their plant-based product lines. In response to consumer preferences and market trends, fast-food chains like Burger King and Shakey’s have introduced plant-based options to their menus. This reflects a broader shift in consumer behavior, with more Filipinos opting for these food choices.



# Soy Foods and Beverages Production

The tofu production industry is made up of local industrial manufacturers, though there are also small-medium enterprises. Masoya, the largest tofu producer in Philippines, makes up 22.8% of the retail market share. Masoya produces a variety of tofu such as tokwa, firm tofu and silken tofu. The second largest tofu producer is Tiong Hwa, which makes up 10.7% of market share.<sup>20</sup> Their tofu is made of non-genetically modified (non-GM) soybeans.<sup>21</sup> Aside from a variety of tofu, they also produce taho, a popular soy-based dessert in the Philippines.



TiongHwa's taho sold in stores.  
Source: A Not-So-Popular

## SOY DRINKS

The top soy milk brand in the Philippines is Green Spot's Vitamilk, which makes up 78.5% of the market share.<sup>22</sup> The company produces soy milk drinks in various flavors: original, double choco shake, energy, milky, banana and strawberry. In 2017, Vitamilk opened a manufacturing plant in the Philippines – the first outside Thailand – due to high demand for Vitamilk in the Philippines, beyond Thai production facilities' capacity.<sup>23</sup> This signifies the growing demand for soy drinks in the Philippines market.

Following Vitamilk, Vitasoy is the second most popular soy milk brand in the Philippines, holding 13.7% of the market share.<sup>24</sup> Vitasoy produces a range of soy milk flavors such as coffee, chocolate, almond, oat and even a "For Baristas" line.



Soy milk from various brands.  
Source: Pepper



Vitamilk Energy in a 300 ml glass bottle.  
Source: Asia Brewery Incorporated



## PLANT-BASED MEAT

As the Philippines is going through a change in dietary preferences towards sustainable alternatives, the trend presents a promising outlook for producers in the Philippines looking to expand into the plant-based meat space.

Century Pacific Food, a local food manufacturer, ventured into the realm of sustainable alternatives with the launch of their soy-based meat alternative brand, "unMEAT," in 2020. Their diverse product range, including corned beef, nuggets and pizzas, has garnered favorable responses from both local and international consumers and trade partners. Collaborations with popular food chains like Shakey's and partnerships with convenience stores like 7-Eleven illustrate the growing acceptance of plant-based options in mainstream culinary culture. Additionally, unMEAT has created products fit for Filipino cuisine such as *giniling*, *siomai*, *siopao* and *tapa*.<sup>25</sup>

Another notable player in this space is WTH Foods, a Filipino-based company creating plant-based meat solutions tailored to Filipino tastes and preferences. Their flagship product, a ready-to-eat ground meat alternative called *giniling*, offers convenience and familiarity to consumers incorporating plant-based options into traditional Filipino dishes.<sup>26</sup>

However, it is important to note that startups in the Philippines encounter several barriers. Challenges such as seasonal raw material availability, inconsistent quality, technological limitations and financial constraints hinder the industry's growth. Despite these factors, the number of plant-based meat brands that have appeared in the Philippines testify to the growing confidence that both producers and consumers have in plant-based meats.



Alternative protein products are displayed inside a freezer at a supermarket in Quezon City.  
Source: Philstar



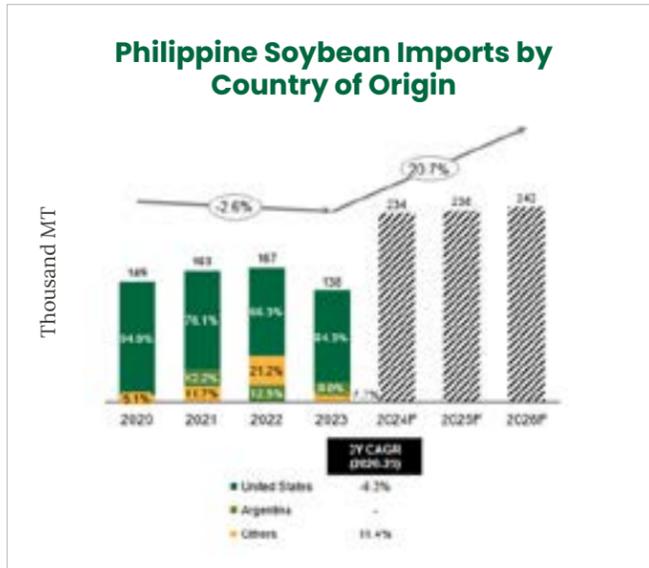
unMEAT's plant-based Tapa.  
Source: Lazada Philippines



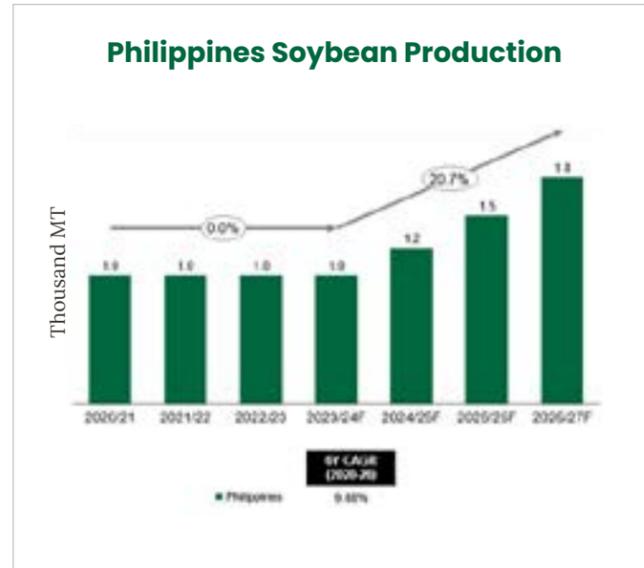
# Soy Supply Chain

## SOYBEAN SUPPLY: IMPORT AND LOCAL PRODUCTION

Soybean supply in the Philippines is primarily met by imports, which makes up 99% of the country's needs. The other 1% is sourced from local producers.<sup>27</sup> In 2023, 138,000 MT of soybeans were imported into the Philippines: 84.3% came from the United States, 8% came from Argentina, and the rest from other countries. While the volume of U.S. Soy imports has declined -6.3% between 2020 and 2023, the U.S. continues to remain the major soybean supplier to the Philippines. Starting in 2023, import volume is forecasted to grow at a three-year compound annual growth rate of 20.7% till 2026.<sup>28</sup>



Source: GTA and OECD



Source: USDA and Y&S analysis

In 2023/24, the Philippines locally produced 1,000 MT of soybeans. This production volume was relatively stable from 2020/21. Soybean production is expected to increase at a three-year annual compound growth rate of 20.7% from 2023/24 to 2026/27, when production volume is forecasted to reach 1,800 MT.<sup>29</sup> This low volume of production is attributed to the limited adoption of modern agricultural practices, lack of access to high-quality genetically improved soybean seeds and the dominance of traditional crop choices like corn and rice.<sup>30</sup>

To ensure food security in the country, the Department of Science and Technology aims to increase domestic production by integrating different cropping systems and improving the productivity of food-grade soybeans.<sup>31</sup> However, it is notable that soybean yield in the Philippines is less than half of the U.S., at 1 MT per hectare (14.9 bushels per acre).<sup>32</sup> Soybean production is mainly cultivated in Region XIII, Caraga, which makes up 68% of local production. Region XII, Soccsksargen, makes up 16%, Region XI, Davao, 10% and Region II, Cagayan Valley, accounts for 7%.<sup>33</sup>



## SUPPLY CHAIN LOGISTICS

Soybean imports for food processing arrive in the Philippines by sea via container. There are three main ports in Manila, Cebu and Davao. The Philippines imports Grade 1 soybeans for food processing and Grade 2 soybeans for feed purposes. However, once the soybeans have entered the local market, some Grade 2 soybeans may be sold to small enterprises for their food production.

Once the imported soybeans have reached Philippine ports, the shipments will go through checks that can take up to seven days. Upon discharge, soybeans will either go to manufacturer-importers that makes direct import orders or to trader-importers that keep the shipment in warehouses for further distribution. Manufacturer-importers make up around 26% of soybean import for food, with the rest traders.<sup>35</sup> Since the Philippines is an archipelagic country, soybeans may be transported via trucks or ships, depending on the end user's location.

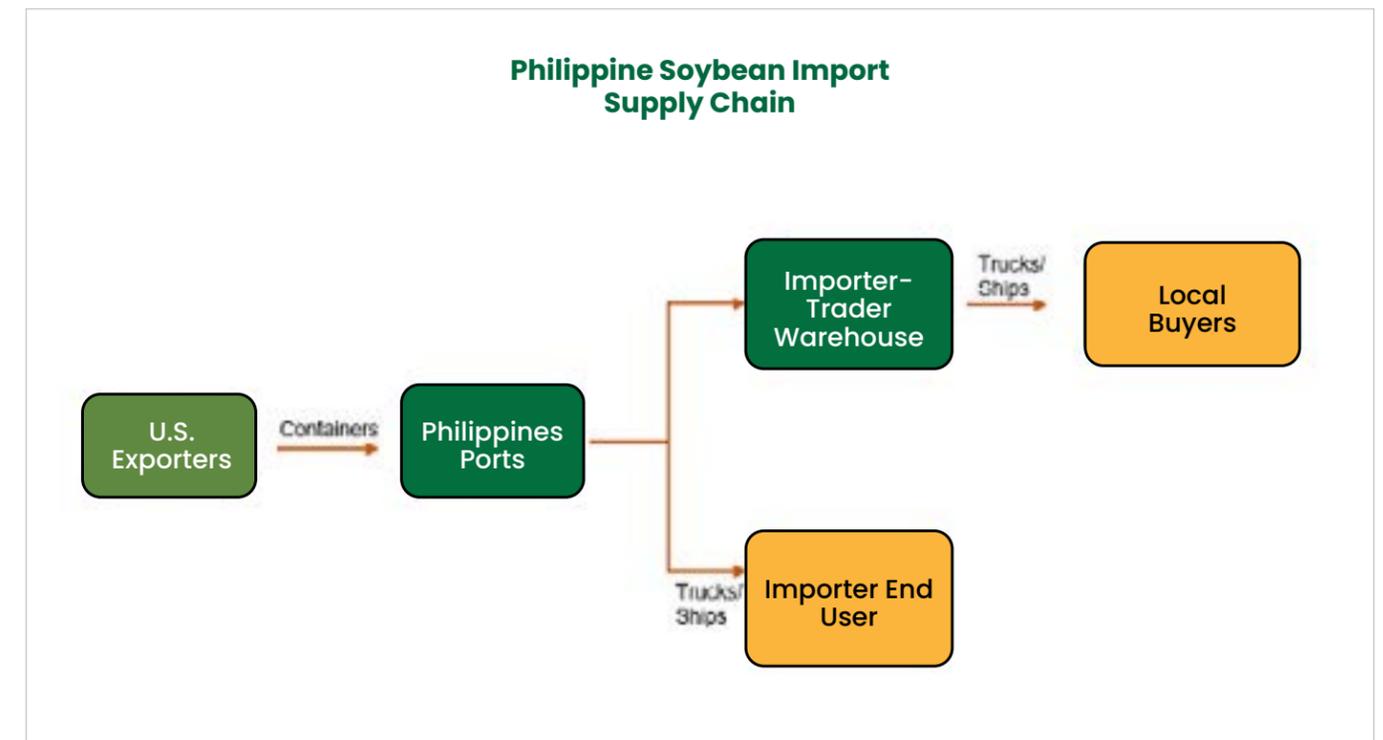
Local trader-importers play a crucial role in the distribution process, purchasing the goods from exporters and selling them to micro-, small- and medium-sized enterprises. Trader-importers usually maintain a one-month supply of soybean as a buffer. The typical use time for soybeans is around 60 days, ensuring a continuous flow of fresh stock. This is managed by recording the arrival, with a first-in-first-out system to ensure product quality.

Soybeans can arrive in bags or be kept in bulk in containers. Loose soybeans are bagged upon arrival for protection. The bags typically weigh 25 kg (55 pounds) or 40 kg (88.2 pounds). Typically, no cleaning is needed, as Philippine importers require exporters to clean the soybean before shipment.

If all paperwork is in order, there is no quarantine for the soybeans. The importation process is the same for both GM and non-GM soybeans, but GM varieties must be listed and approved in the Philippines. Typically, importers of GM and non-GM soybeans operate separately, using different containers to avoid cross-contamination.<sup>35</sup>



Manila Port  
Source: porttechnology



Source: USSEC Philippines country representative and Y&S



# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

In the Philippines, regulations governing imported food and agricultural products are stringent to ensure compliance with food, health and phytosanitary standards. All imports have to undergo thorough procedures to prevent contamination by pests and ensure suitability for their intended use.

Soybean imports for food use are governed by the Bureau of Plant Industry. It requires soybean imports to have import permits, certification whether soybean is GM or non-GM, and phytosanitary certificates.<sup>36</sup> Other import requirements include a must-ship-out date, meaning the products must have left the country of origin within 20 days of sanitary and phytosanitary clearance, use of accredited storage facilities, possession of a license to operate and a certificate of product registration.<sup>37</sup>

### GENETICALLY MODIFIED SOYBEANS

The Philippines has been open to importing GM crops for more than a decade and even permits the commercial cultivation of such crops, making it the pioneer in Asia in this regard. In 2019, the Philippines granted approval for a new GM soybean variety, Enlist E3.<sup>38</sup>

Out of all food soybean imports, 10% are non-GM soybean and the rest are GM.<sup>39</sup> The regulation of GM in the Philippines is governed by Executive Order No. 430 (1990), which established the National Committee on Biosafety, and Joint Circular No. 1 (2016) from various government departments. However, the regulatory framework was updated 2016, with new requirements.

1. **Biosafety Permit:** Necessary for testing, commercial propagation and direct use of GM plants. The Bureau of Plant Industry typically issues a Biosafety Permit within four months of receiving all required documents.
2. **Commercial Propagation:**
  - a. Field trials in the Philippines that show no greater risk to biodiversity, human or animal health than conventional counterparts.
  - b. Food and feed safety studies are consistent with international and local protocols.
  - c. Registration with the Fertilizer and Pesticide Authority if the plant is pest-protected.

For food products derived from biotechnology, the Philippine Food and Drug Administration mandates a food safety assessment based on international standards from the United Nations Food and Agriculture Organisation or the World Health Organisation Codex or Food Code guidelines. However, the Food and Drug Administration has not yet issued guidelines on labeling prepackaged foods derived from GM ingredients.



## FOOD LABELING

### NUTRITION LABELING

Under the food labeling rules, it is mandated that the nutrition facts be presented in tabulated form. The declaration must encompass protein; carbohydrates, inclusive of dietary fiber and sugar; fat, encompassing saturated fat, trans fat, and cholesterol; sodium, and energy value or calories.

All nutrient quantities should be declared in relation to the average or usual serving size, delineated in terms of slices, pieces or a specified weight or volume. It is required that all locally manufactured food products intended for local consumption indicate the corresponding Recommended Energy and Nutrient Intake (RENI) value as a percentage, expressed in whole numbers. Carbohydrates, protein, fats including cholesterol expressed in milligrams, sugar and dietary fiber must be expressed in the nearest gram. Energy values should be expressed in calories (kcal), while sodium must be declared in milligrams.

Vitamins and minerals shall be expressed in milligrams or micrograms (mcg or µg). International units (I.U.) must be used for Vitamins A, D and E.

### ALLERGEN LABELING

Food allergen information on product labels containing specific ingredients, though not limited to those listed, must be clearly, conspicuously and indelibly indicated. This information is positioned directly below the list of ingredients. For instance, the label can read “Contains food allergen: egg;” or “Allergen Information: may contain \_\_\_\_\_” or “Manufactured using equipment that processes \_\_\_\_\_” or similar expressions.<sup>40</sup>



Veega's meat-free tocino, including the ingredient list, nutrition table and allergen labeling)  
Source: Lazada Philippines

**CREDIT:****SOURCES**

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<sup>2</sup>Jeeca, [“Filipino Crispy Tofu Sisig \(Vegan\).”](#) The Foodie Takes Flight, Mar. 1, 2021

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<sup>4</sup>[Gov.Ph](#); accessed May 6, 2024

<sup>5</sup>Philippine Statistics Authority, [Summary Inflation Report Consumer Price Index \(2018=100\): April 2024](#); accessed May 7, 2024

<sup>6</sup>Euromonitor 2024

<sup>7</sup>[“Plant-Based Dairy in the Philippines,”](#) Euromonitor; accessed May 7, 2024

<sup>8</sup>Euromonitor 2024

<sup>9</sup>[“Plant-Based Dairy in the Philippines,”](#) Euromonitor; accessed May 7, 2024

<sup>10</sup>Euromonitor 2024

<sup>11</sup>USSEC Philippines Country Representative, May 15, 2024

<sup>12</sup>[“Can plant-based protein go from ‘fake meat’ to real meals in the Philippines?”](#) Philstar.com

<sup>13</sup>Vila, Alixandra Caole, [“Vegan in the Philippines: How Plant-Based Diet Is Spreading in a Country That Loves Its Meat Dishes,”](#) South China Morning Post, Jan. 10, 2020

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<sup>21</sup>Tiong Hwa Food Products, [“Our Food,”](#) Tiong Hwa Food Products; accessed May 29, 2024

<sup>22</sup>Euromonitor, ‘Company Shares’ and Report of Soy Drinks in the Philippines; Vila, Alixandra Caole, [“Vegan in the Philippines: How Plant-Based Diet Is Spreading in a Country That Loves Its Meat Dishes,”](#) South China Morning Post, Jan. 10, 2020

<sup>23</sup>[“Asia Brewery Opens Hi-Tech Soy Milk Plant,”](#) The Philippine Star, Philstar.com, May 11, 2017

<sup>24</sup>Euromonitor, ‘Company Shares’ and Report of Soy Drinks in the Philippines; Vila, Alixandra Caole, [“Vegan in the Philippines: How Plant-Based Diet Is Spreading in a Country That Loves Its Meat Dishes,”](#) South China Morning Post, Jan. 10, 2020

<sup>25</sup>Cabico, Gaea Katreena, and Kaycee Valmonte, [“Filipino Appetite for Sustainable Alt-Meat Growing but Bigger Push Needed,”](#) The Philippine Star, Philstar.com, Aug. 28, 2022

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<sup>27</sup>Galang, Vincent Mariel P., [“Soybean Industry Targeted for Improved Production, Logistics – DoST,”](#) BusinessWorld, Jan. 13, 2020; accessed May 29, 2024

<sup>28</sup>GTA and OECD

<sup>29</sup>USDA and Y&S analysis

<sup>30</sup>[“Philippines Soybean Market,”](#) 6wresearch.com; accessed May 21, 2024

<sup>31</sup>CEDTyClea, “Soybean Industry Targeted for Improved Production, Logistics – DoST,” BusinessWorld Online, BusinessWorld, Jan. 12, 2020

<sup>32</sup>[“Philippines Soybean Area, Yield and Production”](#) and Y&S analysis; [Gov.In.](#); accessed May 13, 2024

<sup>33</sup>United States Department of Agriculture, [“Philippines: Soybean,”](#) International Production Assessment Division, USDA Foreign Agricultural Service; accessed May 29, 2024

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# Singapore

## SOY FOODS REPORT



# Singapore

Singaporeans frequently consume a variety of soybean food and beverage products – whether tofu, tempeh, soy milk or bean curd (*tau huay* or *dou hua*). Soybean food and beverage products were popularized by Chinese immigrants who arrived in Singapore in the 19th century, bringing with them a multitude of cuisine that included soy sauce and tofu. As time passed, these foods evolved in terms of taste and composition to fit local tastebuds.<sup>1</sup> Soy foods and beverages remain popular in Singapore, with annual per capita tofu and soy drink consumption at 6.5 kg (14.3 pounds) in 2023.<sup>2</sup>

Since Singapore is a small country, most food and beverage products are manufactured outside of Singapore and imported. The local soy foods and beverages space is characterized by intense competition among both local and multinational companies, with major players including Beyond Meat, Impossible Foods, Omnipork, Quorn Foods and Oatly.<sup>3</sup> Additionally, Singapore – being the most developed country in Southeast Asia – leads in food and beverage research and development, both in product development and sustainability initiatives.



A bowl of bean curd.  
Source: Scooter Saigon Tou

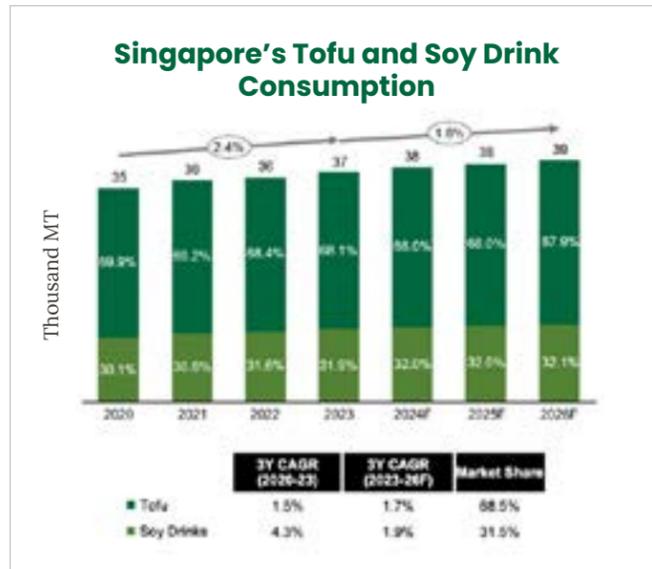


# Consumption and Product Trends

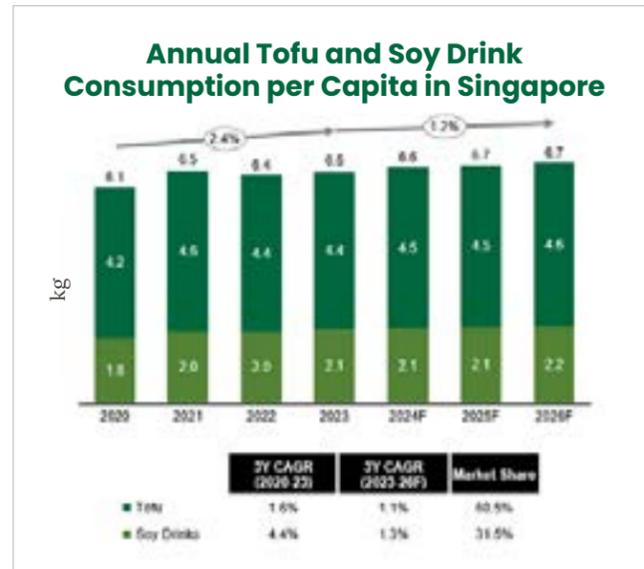
## TOFU AND DERIVATIVES

Tofu consumption in Singapore has a positive outlook and makes up 68.5% of soy consumption between tofu and soy drinks. In 2023, Singapore consumed 25,200 metric tons (MT) of tofu, up from 24,100 MT in 2020, based on the three-year compound annual growth rate from 2020 to 2023 of 1.5%. Tofu consumption is expected to grow 1.8% to 26,500 MT from 2023 to 2026.<sup>4</sup>

Singaporeans ate 4.4 kg (9.7 pounds) of tofu per capita in 2023, and that amount is expected to grow to 4.6 kg (10.1 pounds) in 2026 at three-year compound annual growth rate of 1.1%.<sup>5</sup>



Source: Euromonitor, 2024



Source: Euromonitor and Y&S analysis

The top tofu brand in Singapore is PSC Corporation's Fortune, which makes up 39.9% of the tofu industry in Singapore.<sup>6</sup> PSC Corporation locally produces silken tofu, egg tofu, soya bean curd and more using non-genetically modified (GM) soybeans.<sup>7</sup> Another brand is Unicurd, owned by Vitasoy, which holds 28.4% share of the tofu market in Singapore.<sup>8</sup> Similar to Fortune, the brand uses non-GM soybeans in their products such as tau kwa, silken tofu, egg tofu and tofu puffs.



Fortune's silken tofu products. Source: Fortune



## SOY DRINKS

Soy drink consumption is experiencing a similar trend. In 2023, soy drink consumption was at 11,800 MT and is expected to grow at 1.9% to 12,500 MT in 2026.<sup>9</sup> Annual per capita soy drink consumption was 2.1 kg (4.6 pounds) in 2023 and is expected to grow by 1.3% to 2.2 kg (4.9 pounds) in 2026. Though this is a positive trend, its forecasted growth is slower than the 4.3% increase from 2020 to 2023.<sup>10</sup> This could be attributed to the growing competition from other plant-based milk drinks such as oat and almond milk.<sup>11</sup>

Post COVID-19, there was a surge in plant-based consumption as consumers became more interested in sustainable products to lower carbon emissions. Further, the number of flexitarians – those who mainly have a plant-based diet but consume meat occasionally – in Singapore is growing quickly, as consumers were five times more likely to identify as flexitarian in 2020 than in 2019.<sup>12</sup> These factors would explain the upward trend of tofu and soy drink consumption in Singapore.

Soy drink products in Singapore are dominated by multinational corporations. F&N's Nutrisoy is the top soy drink brand in Singapore, making up 29.3% of market share.<sup>13</sup> Singapore imports a variety of Nutrisoy's soy milk—original, reduced sugar, no sugar, oats and quinoa, and purple rice. Nutrisoy uses non-GM soybeans. In 2019, F&N was reported to build a new facility in Singapore to expand its research and development capabilities and beverage production through economies of scale.<sup>14</sup>

Marigold is another large soy drink brand in Singapore, with 24.3% market share in Singapore.<sup>15</sup> Marigold is a joint venture between Singaporean partners and the Australian Dairy Produce Board that began in 1970s by manufacturing evaporated milk in Singapore.<sup>16</sup> Most of Marigold's production has since moved to Malaysia.

Yeo Hiap Seng (Yeo's) comes third place in market share, with 13.2%.<sup>17</sup> The brand produces regular and black soy milk, with soybean ingredients from Canada. It plans to increase plant-based milk production beyond soy milk, as it enters a joint investment worth \$22 million with Oatly to produce oat milk in Singapore. The production facility is expected to produce 60 million liters of oat milk per year, with room for scale up with additional investments.<sup>18</sup>



Marigold's soya milk line, packaged in cartons.  
Source: Marigold SG



## PLANT-BASED MEAT

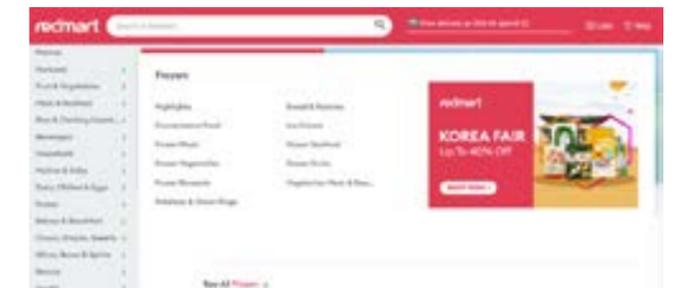
The Singapore meat substitute market is projected to grow by 8.3% between 2024 and 2028, resulting in a forecasted market value of \$20.72 million in 2028.<sup>19</sup> This growth is driven by increasing awareness of the environmental impact of meat consumption, health concerns and the availability of plant-based meat in local formats.<sup>20</sup>

According to a study released by the government agency Enterprise Singapore, plant-based beef is the most commonly consumed plant-based meat in Singapore, though plant-based pork and chicken are growing fastest in consumption. Consumer interest in these products increased almost seven times from 2019 to 2020.<sup>21</sup>

Aside from plant-based meats, Singapore consumers also have grown to enjoy plant-based snacks such as chips, cookies and biscuits. In 2020, there was a 306% increase in the number of consumer reviews for plant-based alternatives, indicating the growth potential of this market in Singapore. Responding to consumer demand, most top retailers in Singapore such as FairPrice, redmart and Cold Storage now stock various plant-based food and beverage options.<sup>22</sup>

Singapore's plant-based meat market is highly competitive and made up of multinational corporations, local start-ups and existing food manufacturers who have pivoted into the plant-based market. Due to increased demand for plant-based meat, producers have been able to scale up, resulting in a 15% drop in prices for such products.<sup>23</sup> Some popular multinational brands include Charoen Pokphand (CP) Group's Meat Zero and Nestle's Harvest Gourmet.

Notable local producers include Lim Kee Food Manufacturing and Ha Li Fa. Lim Kee Food Manufacturing produces plant-based curry buns that are currently exported to Vietnam, Cambodia, the United Kingdom, France, Australia and Canada.<sup>24</sup> Ha Li Fa launched their plant-based brand named Eat Plant Love. Eat Plant Love carries products such as Chinese doughnuts, or *you tiao*, plant-based meatballs and calamari, and vegetable rolls. The brand has collaborated with Lixin Teochew Noodles, a local dine-in chain, to create a plant-based *mee pok*.<sup>25</sup>



Vegetarian meat and seafood option as part of redmart's frozen category  
Source: redmart



Eat Plant Love and Lixin Teochew Noodle's mee pok  
Source: Eat Plant Love



# Sustainability

## CONSUMER AND PRODUCER

According to a survey by Rakuten, 14% of consumers in Singapore buy seasonal produce, 18% have reduced their meat consumption, and 19% have chosen brands with environmentally sustainable practices and values.<sup>26</sup> The reason for these low numbers could be the lack of availability of sustainable options, as half of consumers stated that they do not see enough variety of sustainable options to choose from. Additionally, since sustainable products tend to be more expensive, 66% of consumers see incentives such as reward points or tax relief as a way to push them toward consuming sustainable products.<sup>27</sup> Thus, with the right nudge, sustainable consumption has ample room to grow.

Some producers in Singapore have taken steps to improve their environmental sustainability. Popular soy foods and beverages manufacturer Yeo Hiap Seng (Yeo's) aims to reduce waste by ensuring that 100% of their packaging is recyclable by 2026. Additionally, Yeo's recycles all cartons, plastic, aluminium and scrap metal they use in production processes. They are also planning to reuse okara, which is soy pulp residue.<sup>28</sup>



## GOVERNMENT

Enterprise Singapore has urged local food manufacturers to cut down on food and packaging waste through the Energy Efficient Grant by providing up to 70% funding for businesses to adopt pre-approved equipment aligned with this goal. Mr Bean, a local soy foods and beverages producer, used this grant and has since recycled 5% of their annual waste of 100 ton of soybean pulp into granola bars.<sup>29</sup> The versatility of soybeans in foods and beverages makes them a highly sustainable ingredient and presents opportunities for the U.S. as a source of sustainably grown soybeans.



Popular local food and beverage chain Mr Bean, which sells various soy products such as soy milk, bean curd dessert, ice cream and porridge. Source: Klook Travel



## COMMUNITY

Researchers from the National University of Singapore have also developed an alcoholic beverage named Sachi, made from tofu whey, a by-product of tofu production. Sachi is said to have benefits like high levels of calcium, isoflavones, prebiotics, antioxidants and even cancer prevention due to the nutrients present in tofu whey.<sup>30</sup> Another set of researchers from Republic Polytechnic and SoiLabs have collaborated to convert soybean residue into plant-based cheese, to make use of Singapore's daily wet soybean residue production of 30 MT.<sup>31</sup> These moves show Singapore's commitment to sustainable production, particularly regarding soy-based waste.

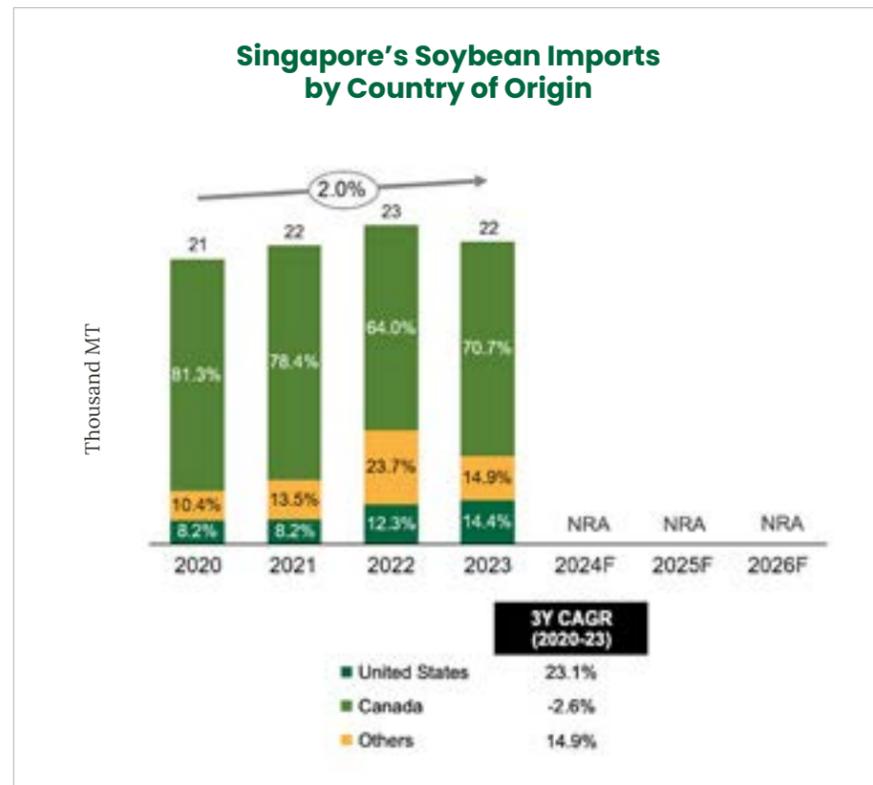




# Soy Supply Chain

## SOYBEAN SUPPLY: IMPORTS

Singapore does not have any local soybean production due to limited agricultural land. Thus, the country completely relies on imports to meet demand. In 2023, 22,000 MT of soybeans were imported, with 70.7% originating from the United States. Total soybean import has increased at a 2.0% three-year compound annual growth rate between 2020 and 2023, with the U.S. leading the growth at 23.1%.<sup>32</sup> This boost in soybean demand could be attributed to the increased interest in plant-based alternatives, as well as government assistance initiatives to ease the rising cost of living and the growth in household disposable income.<sup>33</sup>



Source: Euromonitor and Y&S Analysis





# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

Singapore does not impose quotas or tariffs on soybeans. However, there are stringent import procedures in place. Three agencies are involved in the customs clearance process: Accounting and Corporate Regulatory Authority (ACRA), Singapore Food Agency (SFA) and Singapore Customs.<sup>34</sup>

Before an importer can apply for a food permit, which is required for all food imports into Singapore, the applicant must be registered with ACRA and have a Unique Entity Number, which must be activated with Singapore Customs. Importers must also have a GIRO account for payment of fees and permits. Once they have these documents, importers have to apply for a food permit with SFA's Quarantine and Inspection Department. All imports need to be declared, in English, with their HS product code, product description, quantity and unit of measurement, brand name and country of origin.

Foods claiming to be a source of energy are required to state on their labels the quantity of that food to be consumed in one day, which should yield at least 300 kcal. The labels should also include an acceptable nutrition information panel.

To claim as a source of protein, at least 12% of the total calorie yield of the food should be derived from protein, whereas to be able to claim as an excellent source of protein, a minimum 20% of the total calorie yield of the food should be derived from protein. In addition, the amount of food stated on the label as the quantity to be consumed in one day should also contain at least 10 g of protein.<sup>35</sup>

## LABELING

### NUTRITION LABELING

Nutrition labeling is required when nutrition claims or permitted health claims are made. The information to be declared in the panel includes the energy, protein, fat and carbohydrate contents of the food. Declaration of other nutrients is mandatory when such nutrients are the subject of a nutrition claim.



Nutritional Labeling on local plant-based meat brand ANEW's packaging  
Source: ANEW



## ALLERGENS

Manufacturers must declare the presence of common allergens such as peanuts, tree nuts, soy, eggs, milk, fish, crustacean shellfish, wheat and gluten on the food label. Individuals with food allergies must make informed choices and avoid allergens that may trigger adverse reactions.

In addition to these regulations, companies selling pre-packaged alternative protein products in Singapore are required to label the product with "cultured" or "plant-based" to indicate their true nature, so that consumers may make informed decisions when deciding whether to consume these products. Food establishments are also required to clearly communicate to their customers the true nature of their food sold.<sup>36</sup>

Singapore uses the Healthier Choice Symbol (HCS) to help consumers make healthy choices easily. In order for a product to bear the HCS symbol, they are required to do the following.<sup>37</sup>

1. Submit an application with a nutrient analysis report from an independent accredited laboratory.
2. Once the product qualifies, a License Agreement is needed to use the HCS on its product packaging. All materials using the logo will have to be approved by the Health Promotion Board first.



HCS symbol on carton packaging of NutriSoy's fresh soya milk original flavor  
Source: Nutrisoy

Singapore also has a Nutri-Grade system for beverages to help consumers lower sugar intake, preventing diabetes and obesity. Nutri-Grade labeling is mandatory for all beverages, including pre-packaged and freshly prepared beverages. Companies are expected to adhere to correct labeling of their products, as there is no requirement to submit product testing for approval beforehand. Instead, post-market surveillance will be conducted to ensure that brands comply with regulations. Labeling for those who fall under Grade A and B are not mandatory. The grading requirements are as shown in the chart.<sup>38</sup>

**Singapore's Nutri-Grade Requirements**

Grading system	Grade A	Grade B	Grade C	Grade D
Sugar Content (g/100ml)	≤1 and no sweetener	> 1 to 5	>5 to 10	>10
Saturated fat content (g/100ml)	≤0.7	>0.7 to 1.2	>1.2 to 2.8	>2.8

Source: Health Promotion Board

**GENETICALLY MODIFIED FOOD**

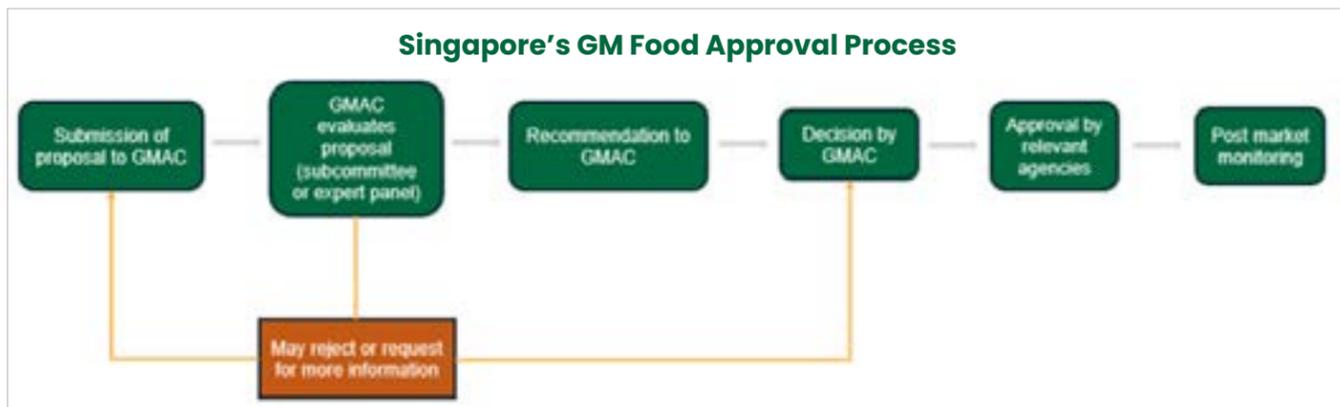
The SFA oversees GM food imports into the country. The Singapore Genetic Modification Advisory Committee (GMAC) and SFA conduct thorough safety evaluations before allowing GM foods to be sold in Singapore.<sup>39</sup> The approval process for GM products described in the chart.

The existing Singapore Food Regulations do not mandate the labeling of GM food or food containing GM ingredients, in accordance with the principles outlined in the Codex. Like all other food products, GM foods must adhere to current food labeling regulations with regard to product information and specifics that make tracing and recall easier, such as an ingredient list and manufacturer or importer information. In Singapore, food products may choose to label themselves as “GM” or “non-GM” as long as the label is truthful and not deceptive.<sup>40</sup>



Nutrisoy's omega soy milk with Nutri-Grade A on the label  
Source: Cold Storage

**Singapore's GM Food Approval Process**



Source: USDA





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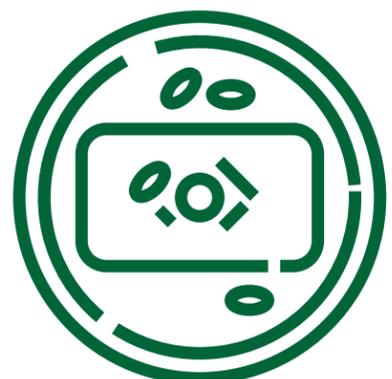
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# Taiwan

## SOY FOODS REPORT



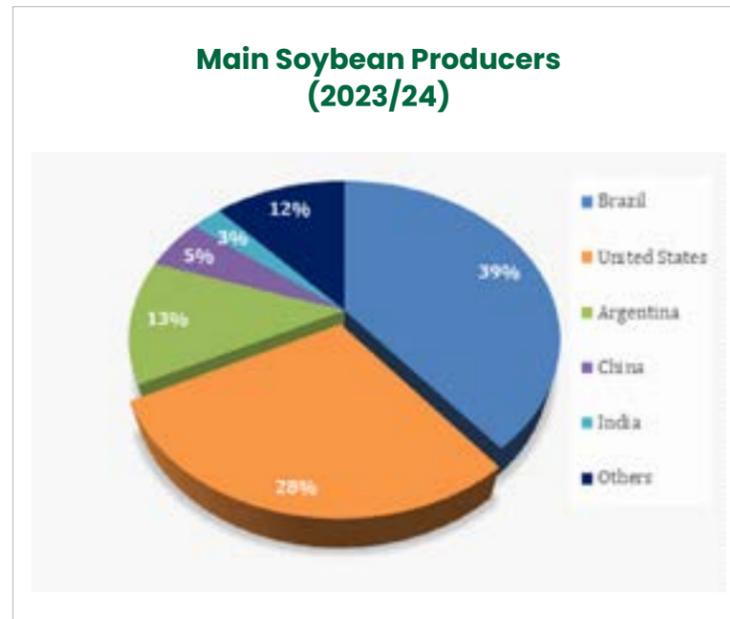


# Soy Supply and Demand

In recent years, the global plant-based eating trend has risen, and the number of people who switch from meat to vegetarian or are more inclined to eat less meat has been on the rise. In addition, Taiwan's vegetarian population has exceeded 3 million.

The high-quality protein provided by soybeans is comparable to meat. Also, diversified soy products have been developed after years of hard work by soy products manufacturers, providing vegetarians with varied choices in Taiwan. In order to provide high-quality soybeans, Taiwanese soybean importers have signed contracts with suppliers in the United States to purchase identity-preserved (IP) soybeans by May every year. Importers have also invested in cold storage systems for soybeans. This elaboration on the soybean market in Taiwan provides an overview of procurement procedures, storage and transportation methods.

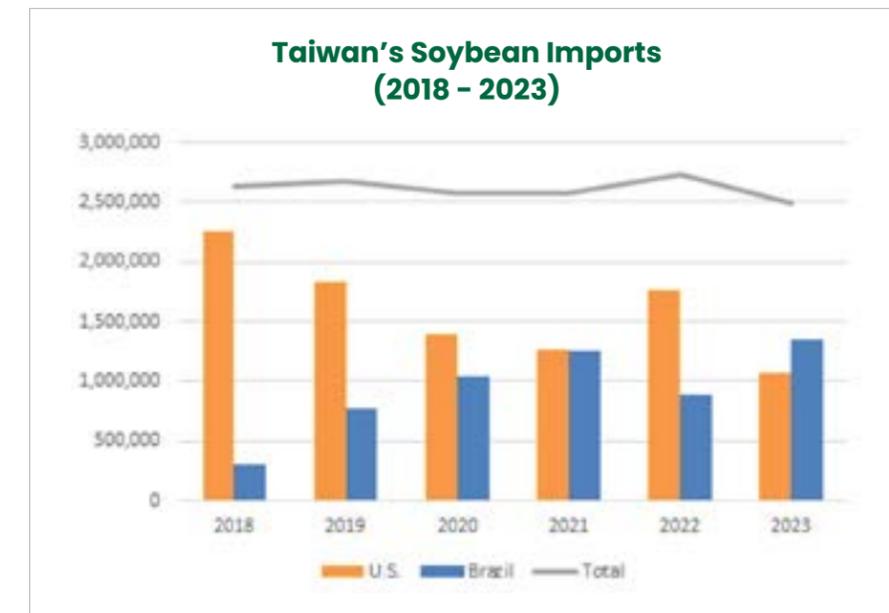
Soybeans are one of the world's major bulk grains. According to the Foreign Agricultural Services (FAS) of the U.S. Department of Agriculture (USDA), in 2023-24 global soybean production reached 396.73 MMT (14.58 billion bushels). The main producers of soybeans include Brazil with 155 MMT (5.7 billion bushels), or 39% of production, the United States with 113.34 MMT (4.16 billion bushels) or 29%, Argentina with 50 MMT (1.8 billion bushels) or 13%, China with 20.84 MMT (765.66 million bushels) or 5% and India with 11 MMT (404 million bushels) or 3%. These five countries account for 88% of world production, as shown in the Main Soybean Producers chart. The United States, Brazil and Argentina are the biggest producers, while China is the largest importer, accounting for approximately 60% of the global soybean trade volume and a third of the world's demand. As the world's largest soybean consumer, China's demand has a strong influence on global prices.



Source: USDA



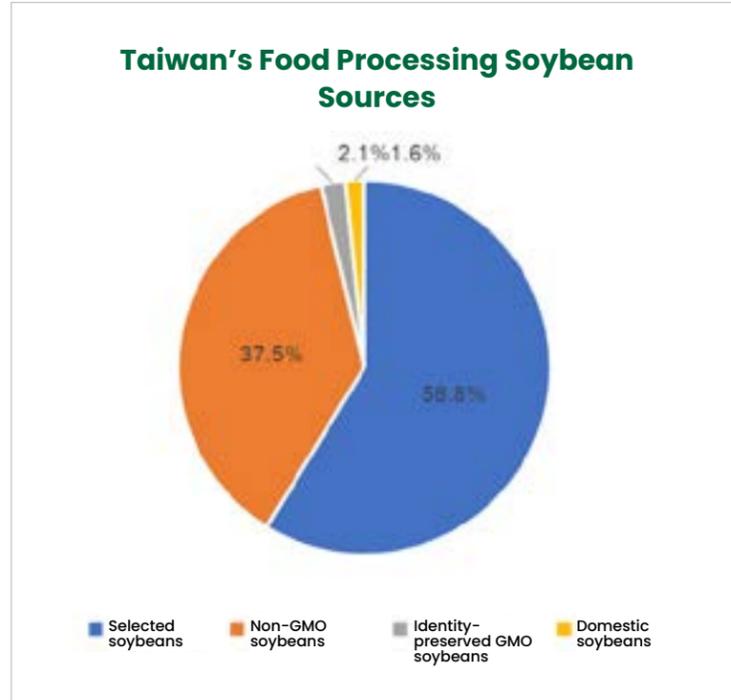
In the last six years, Taiwan has imported 2.6 MMT (95.5 million bushels) of soybeans annually, predominantly from the United States and Brazil as shown in the Soybean Import chart below. More than 90% of the soybeans are crushed to produce soybean meal and soybean oil, highlighting its enormous economic value. Soybean meal serves as a protein source for livestock feed, while soybean oil is a common cooking oil in Taiwan. Soybeans are also the world's second largest source of plant-based oil, following palm oil, and soybean oil widely used in food for human consumption, such as salad dressings and margarines, as well as chemical and industrial uses like paints, soaps and pesticides.



Source: Taiwan Customs Administration, Ministry of Finance

In addition to its value as a feed and oil, soybeans play an important role in Asian diets. In the 2022 Food and Supply Utilization Yearbook, an annual report published by the Council of Agriculture (COA), Executive Yuan, it can be deduced from 10% of the amount of soybeans processed in Taiwan that the annual demand for soybeans used for soy foods, including tofu, dried tofu, soy milk, meat alternatives, miso, etc., is projected at 230,000 MT (8.45 million bushels). This is close to the 220,000 MT (8.08 million bushels) in market demand estimated on the retail end. Following the series of food-safety scandals in late 2014, Taiwan saw a significant boost in the market for non-genetically modified organism (non-GMO) soybeans.

However, most of Taiwan's current market share, roughly 60%, comprises selected soybeans, specifically GMO soybeans from the United States that have been screened, cleaned and removed of foreign material, and repackaged into 30-kg (66-pound) or 60-kg (132-pound) bags. According to sales and industry figures, Taiwan's annual demand for selected soybeans is approximately 132,000 MT (4.84 million bushels), non-GMO soybeans at 84,000 MT (3.09 million bushels), IP GMO soybeans at 5,000 MT (183,700 bushels), and domestic soybeans at 3,360 MT (123,450 bushels). Domestic production in 2022 was 5,619 MT (206,450 bushels), of which 60 to 70% is food-grade. See the Taiwan's Food Processing Soybean Sources chart for details.



Source: Customs Administration, Ministry of Finance; 2020 Food and Supply Utilization Yearbook, Council of Agriculture

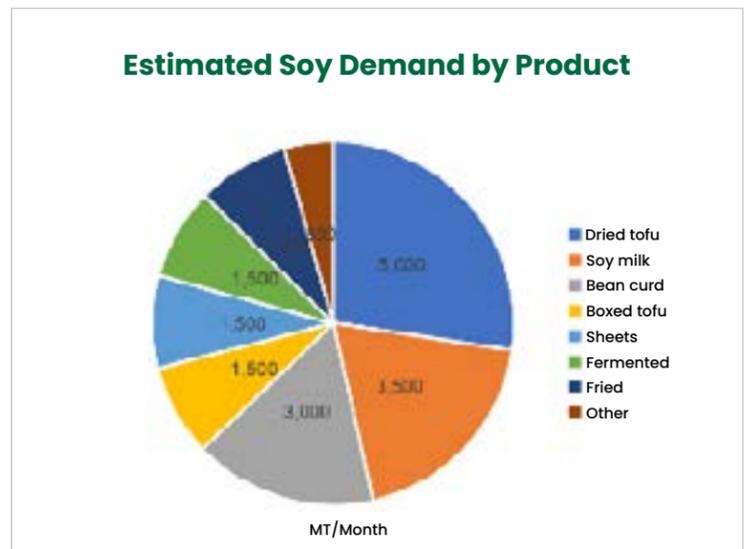
### Main Processing Methods of Traditional Soy Foods



No studies are available in Taiwan regarding the ratio of different processed soy foods among all soy food products. Market share estimates are made for products based on the demand for soybeans from various processing plants.

Soy product categories:

1. Dried tofu: Dried bean curd, black dried tofu
2. Bean curd: Hard bean curd tofu, frozen tofu, fermented bean curd
3. Sheets: Tofu noodles, soy-meat substitute, dried tofu snacks
4. Fermented: Miso, soy sauce, tempeh
5. Fried: Marinated bean curd, triangle-fried tofu, fried tofu skin
6. Other: Hundred-layer tofu, natto, bean sprouts



## INDUSTRY OVERVIEW

### DEMAND SIDE

Soybeans are an important plant-based protein source. The Taiwanese people may not consume whole soybeans, but a wide variety of processed soy foods make up a considerable part of their everyday diet. They drink soy milk at breakfast shops, eat frozen tofu and deep-fried tofu skin with hot pot, and consume tofu noodles and sweet bean curd in their lunchboxes. At night markets, they snack on braised dried tofu, marinated bean curd, dried tofu, tofu pudding, stinky tofu, triangle fried tofu, hundred-layer tofu, soy-meat substitute and five-spice tofu. Soy foods are an inseparable part of their lives.

In traditional soy food processing, the main procedures include soaking, grinding, heat treatment, filtration, cooking to destroy bacteria, adding coagulants, breaking, molding, dewatering, preliminary processing or cutting, and frying. See the Processing Methods chart for more details.

## SUPPLY SIDE

Taiwan's two main suppliers of selected soybeans are TTET Union and Central Union Oil Corporation, who together meet the vast majority of demand. The larger the amount of raw soybeans they screen, the higher the quality of screened soybeans. Screening selects a specific volume of the highest quality soybeans. Statically, the larger the volume of raw soybeans screened, the smaller the percentage needed to fulfill the given volume, and the more likely the selected soybeans will be more uniform based on quality standards. This perfectly illustrates the concept of economies of scale.

Due to the low entry barrier to supplying non-GMO soybeans, various importers and foreign suppliers are fighting for market share. According to the Bureau of Foreign Trade, Ministry of Economic Affairs, a total of 113 companies imported non-GMO soybeans into Taiwan this year. Although this is a decrease from the more than 160 importers from three years prior, this is still a sign of a highly competitive market.

## PROCUREMENT PROCESS

Taiwan's main mode of soybean import is via shipping, which can be differentiated into container ships, bulk carriers and oil tanks/LPG carriers, as shown in the table. Most bulk carriers transport unpackaged bulk cargo, such as grains, cement, coal, iron ore and bauxite ore. Of these, iron ore, coal and grains make up the majority of cargo.

### Types of Shipping Vessels

Type	Main Types of Cargo
Container Ships	Various finished and semi-finished products
Bulk Carriers	Grains, cement, coal, iron ore, bauxite ore, etc.
Oil Tanks/LPG Carrier	Petroleum, liquified petroleum gas, liquified natural gas

Bulk carriers are segregated into four major size categories based on their deadweight tonnage (DWT), as detailed in the second table. Bulk carriers differ by typical cargo, pricing depends on global economic conditions and merchant fleets may have varying numbers and types of vessels depending on their needs.

### Size Categories of Bulk Carriers

Category	Deadweight Tonnage (Metric Tons)	Main Cargo	Shipping Rate
Cape size	>100,000	Coal, iron ore, phosphate ore, bauxite ore, and other raw materials	BCI
Panamax	60,000 to 100,000	Basic commodities and grains; will also transport coal and iron ore	BPI
Supramax / Handymax	40,000 to 60,000	Grains, cement, wood, sawdust, fertilizer, pulp, etc.	BSI
Handysize	10,000 to 40,000		BHSI



Procurement is the key to success in the grain industry. The cost of raw materials of soy may account for more than 90% of revenue for oil crushers. Any misjudgment or miscalculation in pricing, trends or arrival times of commodity shipments, may cause a catastrophic error. Taiwan mainly imports soybeans through cooperative procurement, where the needs of member buyers are aggregated and procured in the unit of one bulk carrier, lowering costs and risk to all. Oil crushers and feed producers largely adopt this method. The basis for freight calculation is determined by open tender or price negotiation. To really minimize costs, it's important to have a good eye and sense of timing on soybean futures. Futures orders are determined by the price on the Chicago Mercantile Exchange (CME), and once the quantity is determined, the shipping vessel will set out with its cargo.

During the period when the order is first submitted through five days before the bulk carrier pulls into a Taiwanese port, buyers can decide whether to meet their demands in one order, or to put in a series of orders based on daily ups and downs in pricing. All that matters is that all of the cargo has been ordered by the time the ship arrives in port. Additionally, some raw soybeans and non-GMO soybeans are transported by container ships, due in part to the fact that container ships are occasionally more competitively priced than bulk carriers, and in part due to the fact the raw soybean quality determines the quality of final products. The procurement method is quite similar to bulk carriers: First the basis is determined, and then the cost is decided by futures orders. Some suppliers even offer cost and freight (C&F) and cost, insurance and freight (CIF) prices, allowing buyers to avoid the hassle of additional paperwork.



## SHIPPING AND STORAGE PROCESS

After being harvested in the U.S. Midwest, the raw soybeans are transported to ports along the Mississippi River via trains and trucks, then sent by barge to the Gulf of Mexico, where they are loaded into giant bulk carriers. After 30 to 40 days at sea, through the Panama Canal and across the vastness of the Pacific Ocean, the cargo finally arrives in Taiwan. Some soybeans arrive by container ships from the east or west coasts of the United States. Non-GMO soybeans enter the Taiwan market in 30-kg (66-pound) paper bags, after having been processed, screened, packaged and transported by container ships, although some are packaged in big bags of 1 MT and sent by container or in bags. As mentioned before, because we have not reached economies of scale, unlike Korea and Japan, Taiwan is currently unable to screen non-GMO soybeans imported by bulk carriers after arrival.

At present, the soybeans imported by two Taiwanese soybean oil producers conform to Grade 2 by the National Standards of the Republic of China (CNS). As shown in the Standards for Soybean chart below, food-grade selected soybeans that have been screened and selected generally conform to the standards of Grade 1. However, because non-GMO soybeans are sourced from so many brands and suppliers, each with their own different standards for assessment, the Quality Assessment Standards table below shows only the quality assessment standards of non-GMO soybeans at Central Union Oil Corp.

### Chinese National Standards for Soybeans

Grade	Minimum Bulk Density (g)	Moisture	Splits	Maximum Allowance %			
				Damaged kernels		Foreign material	Beans of other color
				Total	Heat - damaged kernels		
1	730	13.0	10	2.0	0.2	1.0	1.0
2	700	14.0	20	3.0	0.5	2.0	2.0
3	670	14.0	30	5.0	1.0	3.0	5.0
4	630	14.0	40	8.0	3.0	5.0	10.0

Source: National Standards of the Republic of China (CNS), Bureau of Standards, Metrology, and Inspection, Ministry of Economic Affairs

### Central Union Oil Corp. Soybean Quality Assessment Standards

Quality	
Protein	40% Min.
Moisture	13.5% Max.
Damage	1.0% Max.
Split	1.0% Max.
Foreign Materials	1.0% Max.
Stone Beans	0.5% Max.
Wrinkled Beans	1.0% Max.
Beans of Other Color	1.0% Max.
Purity	99.1% Min.
Cleaning	Over a 12/64 Slot

Source: Central Union Oil Corp



In Taiwan, the shipping and storage of soybeans is generally conducted in bulk or in 1-MT (1.1 U.S.-ton) bags for larger food processing plants; in 60-kg (132-pound) bags of selected soybeans and 30-kg (66-pound) bags of non-GMO soybeans for small to midsize processing plants; and in 30-kg (66-pound) bags of selected soybeans or non-GMO soybeans for breakfast shops and grocery stores. The comparison of different types of packaging and consumer features are shown in the following table.

### Packaging and Consumer Features

Soybean	Packaging Type	Consumers	Consumption
Selected soybeans	30-kg PP bag	Breakfast shops, grocery stores	< 120 kg/day
	60-kg PP bag	Small to midsize soy food processing plants	120 kg-3,000 kg/day
	In bulk or 1-MT bags	Large soy food processing plants	> 3,000 kg/day
Non-GMO soybeans	30-kg paper bag	Soy food retailers	
	1-MT bags	Mid to large soy food processing plants	> 600 kg/day
Organic soybeans	30-kg paper bag	Organic stores	

Source: Industry feedback

On average, each Taiwanese person consumes 11 kg (24 pounds) of soybeans a year, not including soybean oil, more than neighboring China and Japan. However, producers of soy products will likely not see opportunities in significant growth, as any growth may only be in the margins of choosing between selected soybeans and non-GMO soybeans. But based on customs data for the past five years, Taiwan's supply of soybeans is holding steady, meaning that the chances of explosive growth in non-GMO soybeans looks thin.

Although GMO soybeans imported to Taiwan are strictly regulated by the Council of Agriculture and the Ministry of Health and Welfare, many countries have approved their cultivation or importation. In fact, GMO soybeans are more insect- and herbicide-resistant, thereby decreasing the environmental impact associated with pesticide use. The advancement and adoption of biotechnology has also lowered production costs of genetically engineered soybeans compared to those produced through traditional means, making it both economic and beneficial. By understanding the science and expertise and learning about genetic engineering, Taiwan can establish correct knowledge of food safety and protect its rights to safe food.

# Soy Food Market Development

In 2020, 250,000 MT (9.2 million bushels) of soybeans were consumed as food products in Taiwan, including 80,000 MT (2.9 million bushels) of non-GMO soybeans and very small amounts of organic soybeans. Due to historical and cultural factors, the varieties of soybean food products were mostly developed and manufactured in Taiwan. Hence, people of Taiwan are enthusiastic about soybean food most of the time.

There are more than 200 soybean food manufacturers in Taiwan. They operate at different levels of productivity; however, they all confront a similar difficulty.

The soybean food industry is weakening, with less support and resources provided by Taiwan's government agencies. The government agencies have no control of precise statistics regarding the industry.

This section of the report provides an overall background regarding Taiwan's soybean food industry, market situation, issues and counter measures. Products, technologies and future development will be elaborated, as well.

It is widely recognized that global soybean food demand is growing quickly, and a reliable supply of quality soybeans is required. USSEC and U.S. Soy works to bring farmers, processors, certified agencies, research labs and manufactures together to build an integrated, sustainable soybean industry.

Taiwan is an aging society where issues such as healthier lifestyles, exercise and environmental sustainability are rapidly gaining prominence. Plant protein, of which soybeans are the main source, is an important part of these trends.

Many clinical studies have demonstrated that soybeans contain various beneficial compounds for the human body that can help prevent diseases common in modern society. This has contributed to the growing demand for soybeans and an era of new soybean products.

The humble soybean packs a nutritional punch. However, soybeans are rarely eaten directly in everyday meals; they are usually consumed in the form of various processed soybean products. Cholesterol-free, containing protein and easy to process, soybeans have become an important food source for people of all ages.

Within the soybean processing field, tofu manufacturing has a relatively low barrier to entry, and therefore, it has a more complex ecosystem of producers. These producers should consider the societal view of tofu, the state of the current industry and future developments and goals.

Taiwan has a wide variety of processed soybean products. The diverse selection of options is popular with consumers.



Imports of GMO and Non-GMO Soybeans to Taiwan (2018-2023)

Year	Non-GMO	GMO	Total (MT)	Non-GMO %
2018	75,276	2,552,382	2,627,658	2.86%
2019	81,335	2,588,585	2,669,920	3.05%
2020	85,508	2,498,022	2,583,530	3.31%
2021	78,821	2,495,688	2,574,509	3.06%
2022	85,868	2,642,674	2,728,542	3.15%
2023	87,419	2,400,780	2,488,199	3.51%

Source: Taiwan Ministry of Finance Customs Administration Database

## Types of Soybean Products

**大豆**  
DÀ DÒU

Soybean is a species of legume whose beans are rich in protein, giving in the moniker "the meat of the fields." Soybeans picked before ripened can be made into edamame. Ripened beans are called "yellow beans" (huangdou) or "black beans" (heidou) in Chinese based on their color, though both come from the same plant.

**Common soybean products**

- Tofu**: The most common soybean product, could be made into oil tofu, stinky tofu, fried tofu, frozen tofu, etc.
- Natto**: A common traditional food in Japan. A love-it or-hate-it food due to its strong odor.
- Tofu pudding (doughua)**: Known as doufunao when only semi-congealed, and douhua when fully congealed.
- Dried tofu (doughuan)**: Made by dehydrating and compressing tofu; often used in cooking.
- Tofu skin (doupi/fuzhu/qianzhang)**: Made by heating soy milk, then skimming off and processing the dregs that float to the top. A wide variety of variations.
- Soy milk (baijiang/qingjiang)**: Soybeans ground into liquid, milk more or less.
- Soy Meat Substitute (suji)**: A common ingredient in vegetarian food so named because of its texture similar to chicken.
- Soybean oil**: Extracted from soybeans. Used in food and also printing.
- Soybean dates (douzao)**: Often seen in lunchboxes and with breakfast porridge. Many people do not know what it is actually called and just say "the red thing".
- Miso**: A Japanese bean sauce made with fermented beans, rice, and wheat.
- Soy sauce (jiangyou)**: Made with soybeans fermented with a starter known as qu, water, and salt.
- Fermented tofu (doughu/nanru/maoru)**: Made with tofu that is fermented, brined, and reprocessed.
- Totoro**

Source: <https://health.ettoday.net/news/1159262>

## STATE OF THE INDUSTRY

The culture of tofu-making originated in Han-dynasty China, with the invention of tofu credited to Liu An, Prince of Huainan, 179 to 122 BCE. The craft, along with the food culture associated with tofu, was passed down through the generations to this day.

Taiwan is home to a wide variety of soybean processing manufacturers, existing in different ecosystems and at varying levels of market competitiveness. An important differentiating factor is whether a company targets domestic or export markets. Taiwan's processed food exporters have grown and transformed as food safety has become an increasingly prominent issue internationally. Exporters have received international certifications to access worldwide markets. In contrast, producers for domestic markets vary greatly in quality.

The past decade has seen waves of panic over GMO soybeans among the general public, driven by misinformation. This has caused severe pressure on companies and factories that use GMO soybeans, with some going out of business as a result. The controversy has also posed difficult dilemmas for companies that use both GMO and non-GMO soybeans.

In response to the discourse between GMO and non-GMO supporters, Taiwan's government set stricter standards for GMO labeling than other countries in Asia. Compliance with these standards led to a period of slower sales for soybean processing companies.

Fortunately, media attention has been diverted to other topics. With the issue fading from consumers' minds, the choice between GMO and non-GMO soybean products can once again be a matter of individual preference and awareness, based on product labeling.

However, the industry is facing more emerging challenges, including inconsistent quality and unstable supply due to climate change, the effects of the COVID-19 pandemic, and problems of shipping materials to Taiwan. These crises cannot be ignored.

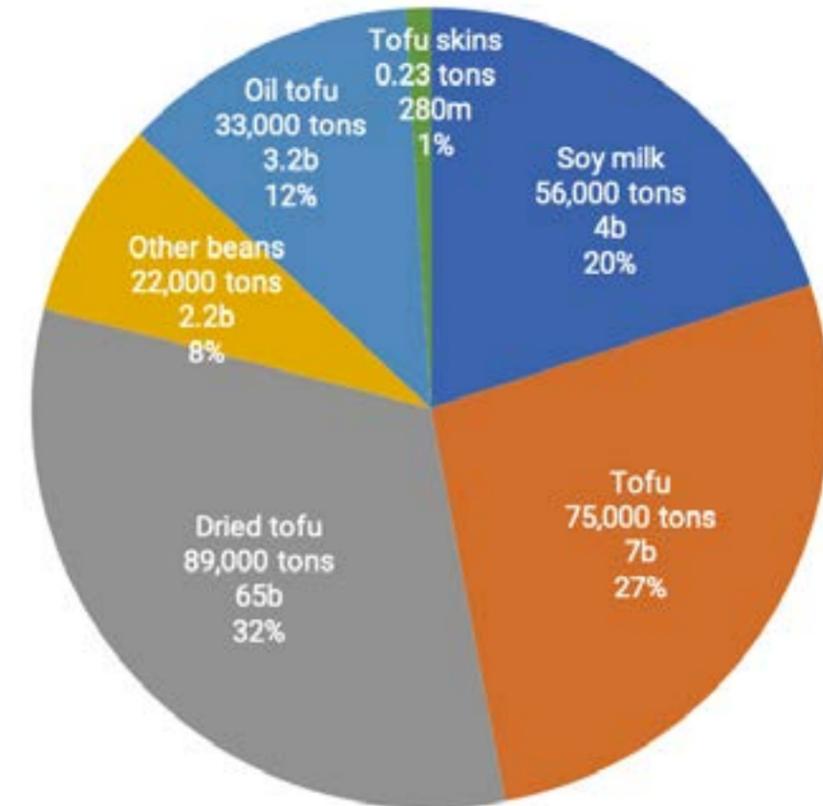
In this era of low profit margins and the issues described above, it is difficult for companies along the supply chain to achieve high performance. Traditional tofu producers are particularly hard-hit.

The largest market channel for soybean products in Taiwan is traditional markets, where the products are sold to families and businesses. Restaurants and snack food producers are secondary channels.

The supply of soybeans has been flat in recent years, as demonstrated in the import chart on page 89. Just 9 to 10% of total soybean imports are used for food products, not including soybean oil. Significant growth on the sales side will be difficult. The only likely point of growth will be diversification with new products that use soybeans and development to use soybeans as a lower-cost alternative in other products.



Soybean Products Volume, Market Share and Projected Value



Sources: Taiwan: Oilseeds and Products Annual, U.S. Department of Agriculture Foreign Agricultural Service

## INNOVATION

In low-margin, mature markets, traditional products like soybeans need attention-grabbing innovations to sell. In addition to developing innovative new products, companies must also work diligently to improve their operations and management.

In recent years, companies have invested in their own supply chain fleets and management systems to diversify sales. They are also increasingly developing their own sales channels to shake off the market malaise. This has led to more brick-and-mortar stores and more innovative products. For example, blending soy milk with tea provides a unique flavor compared to tea drinks with dairy milk. Soybeans are also used in plant-based protein products targeted at middle-aged and older consumers, as well in soft drink products competing with sodas and juices.

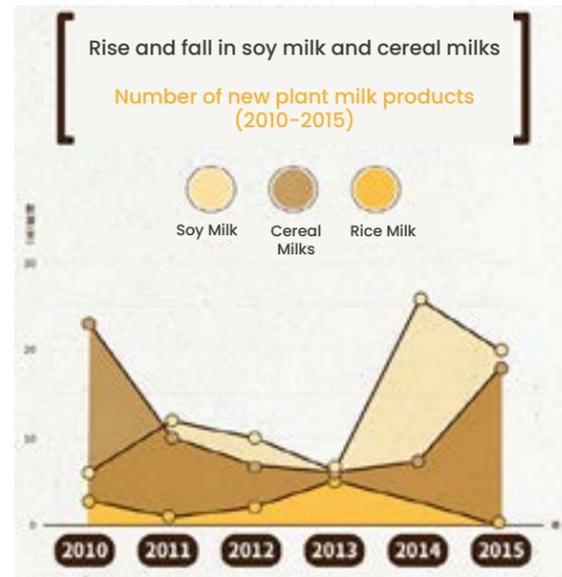
New soy milk specialty shops are springing up all over. Brick-and-mortar stores specializing in soybean products are expanding their presence in Taiwan's cities, providing specialization, diversity and convenience. These stores are able to set much higher prices than what traditional producers can sell through the usual sales channels.

### Soybean Product Specialty Stores

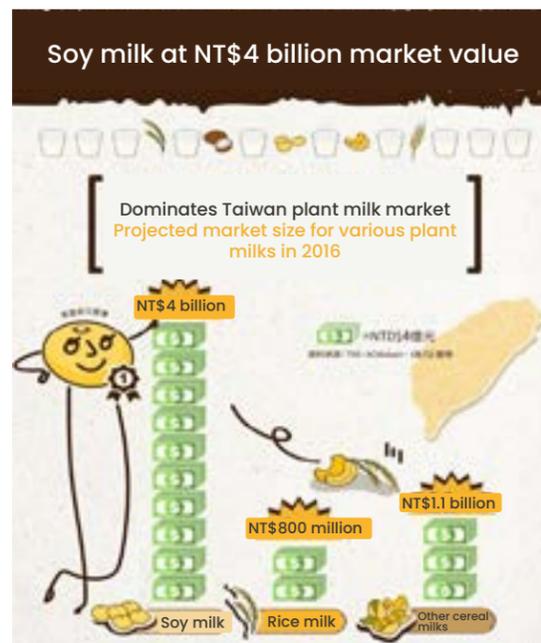


Source: <https://food.suiis.com/main.aspx?id=700100235>

### Growth in Soybean Drinks



Source: Food Industry Research and Development Institute, compiled by FoodNext



Source: <https://www.foodnext.net/issue/paper/4593743575>



## FUTURE DEVELOPMENT

Many uncertainties and challenges lie ahead for the soybean product market, in particular the challenge of innovation. From simple processing to further biotechnology or circular economy applications, innovation could add great value to the humble crop.

### SOYBEAN PROCESSING

The tofu industry uses several different processes to grind beans, extract soy milk and heat and remove the dregs, producing tofu in a variety of textures, as well as other products taking very different forms.

The dregs left behind in the production of tofu and soy milk are known as okara. It is low in value and unappealing in texture, but it has nutrients and components such as protein, calcium and iron, and it is low in saturated fat, making it a potential ingredient in new food products. While okara is used in many dishes in southeast Asia, the current utilization and production rate is not ideal.

What to do with okara is an important challenge that the industry must confront now and in the future. For large-scale soybean processing companies, this is an important issue of risk management. It also will be a basic environmental question that must be adequately answered for sustainable operations.

Possible channels for disposing of okara include drying and processing, fertilizer and fermentation for animal agriculture. However, all of these methods require expanded investments or collaboration with other companies. Small and medium enterprises or micro-size producers may be unwilling or unable to face this issue.

### BIOTECHNOLOGY

Adding carefully selected microbes into the processing of soy milk, tofu or okara allows the soybeans to be broken down and fermented, so that the nutrients can be concentrated and the molecules shrunken to maximize bioavailability.

Eating food does not ensure that the nutrients are completely absorbed by the body. Specific fermenting techniques allow the most important molecules to shrink down and become more easily absorbed by the human gut. With high-quality probiotics, this could produce activated enzymes that benefit human health.

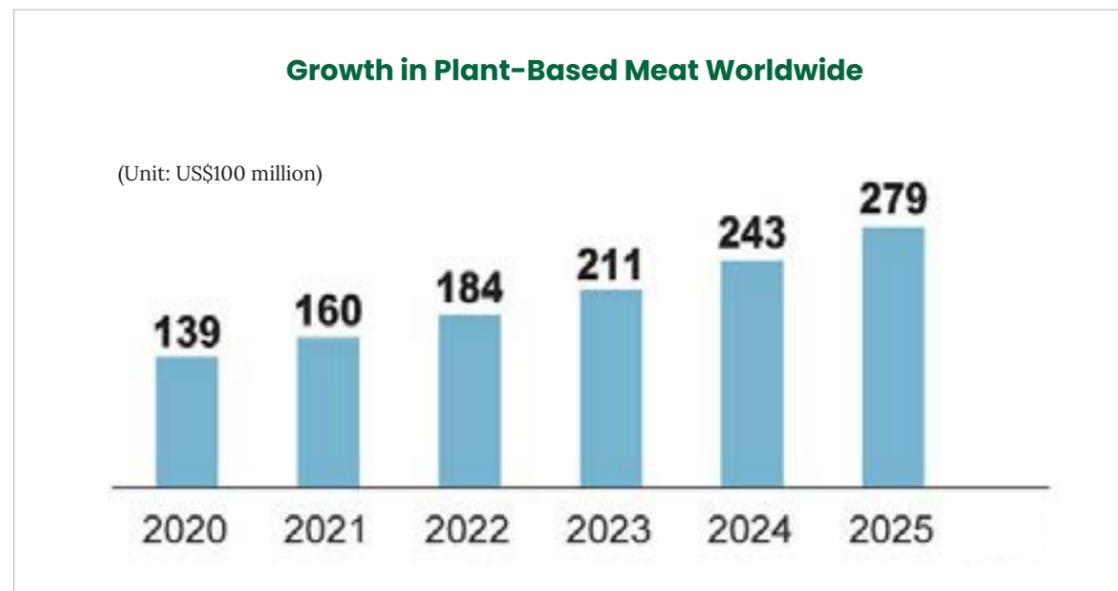
## VALUE-ADDED USES OF OKARA IN BIOTECHNOLOGY

- High-end: Providing raw materials for personal care products such as soy facial washes. Japan is the world leader in biofermenting technology for food products, and a possible model to learn from.
- Mid-grade: Use in processed food products, bakery products, fried foods, hamburger patties, dumplings, fish paste and minced meat products.
- Low-end: The agriculture industry uses liquid fertilizer, which releases amino acids that help plant growth and improve fruit development. Composted okara can be used in soil mixtures or as an organic fertilizer.

In animal husbandry, fermented okara can break down proteinase inhibitors, improving the utilization of proteins.

From a circular economy perspective, as the world turns its attention to environmental and food issues, plant-based meats are gaining awareness in the non-religious vegetarian and younger market segments. The feed conversion ratio of various meats and meat alternatives is becoming a topic of discussion. With these global trends, plant-based meats will become a major area of development.

In these circumstances, the Soy Sustainability Assurance Protocol (SSAP) promoted by U.S. Soy is a good way to encourage support among Taiwanese consumers.



Note: All numbers 2021 and after are projected; reflects Apr 2021 data  
Source: Markets and Markets AXA, compiled by Taishin Investment Trust



## ADDITIONAL PROSPECTS AND CONCERNS

To stem an outbreak of African swine fever (ASF), Taiwan’s government banned the use of kitchen scraps to feed pigs several years ago. The ban caused a panic among soybean processing companies.

The spread of ASF was mainly attributed to kitchen scraps, or leftover food from restaurants and homes, most of which contain leftover meats. However, most pig farmers mixed in okara with the kitchen scraps used to feed their pigs, leading some to mistakenly believe that okara could also spread ASF.

Taiwan’s government has clarified the issue, explicitly classifying okara as “plant-based scraps” to differentiate it from kitchen scraps with meat mixed in. With effective management in normal times, the disposal of okara no longer poses an issue. However, due to the nature of the tofu industry, the government may still crack down on using okara as pig feed if an ASF outbreak does occur. This poses a risk for the disposal of okara.

To sum up the above, stable and moderate growth is projected for soybean products and the tofu industry in the future. As companies move up the sales chain, trends such as Taiwan’s aging society, growing awareness of environmental issues, interest in plant-based meats and the development of new products could all create momentum for demand and growth in soybean products.

In the global market, U.S. soybean growers are more consistent in supply and more advanced in technology compared to those of other countries. If uncertainties in the various steps in the chain between the growers, processing plants and end consumers could be eliminated, and the various parts of the industry chain brought together to form a soybean development ecosystem based on sustainable concepts, then its competitiveness will be unmatched.



# Plant-Based Meat

Following the Industrial Revolution, the global average temperature has risen 1°C (1.8°F) higher than pre-industrial levels. The Intergovernmental Panel on Climate Change (IPCC) of the United Nations issued a special report on the risk of a global average temperature increase of 1.5°C (2.7°F), based on research from 91 experts and citations from more than 6,000 research reports. The report pointed out potential biological hazards due to drastic changes in the environment if the temperature rises more than 1.5°C to 2°C (2.7°F to 3.6°F).

## MARKET INTRODUCTION

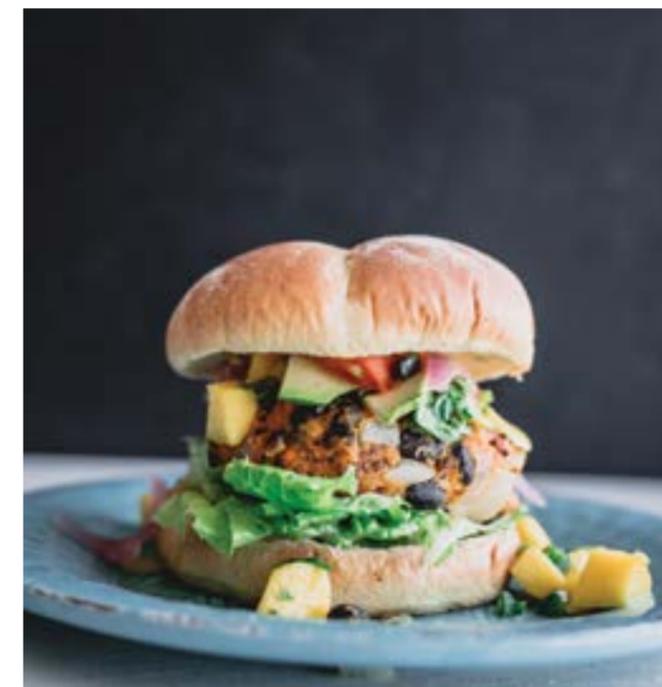
In May 2019, the U.S. plant-based meat company Beyond Meat had its initial public offering. The stock price surged from \$25 to reach approximately \$239 in two months, hitting a record high. Invested in by many celebrities and well-known venture capital firms, the company quickly set off an artificial meat rage around the world.

According to Euromonitor International, a global market research company, about 42% of the world population eats flexitarian as of 2020. Flexitarian is a plant-based diet that claims to reduce carbon footprint and improve health with an eating regime that's mostly vegetarian, yet allows for the occasional meat dish. In the same year, the vegetarian population of Taiwan reached about 3 million, or approximately 13% of the total population, ranking second with of Israel, behind world-leader India, where 38% of the population is vegetarian.

Taiwan's plant-based meat technology among the most advanced in Asia. Due to the number of people who adopt vegetarian lifestyles for religious reasons, Taiwan developed artificial vegetarian meat, complete with fibers to recreate muscle tissue, by the late 20th century. This was accomplished by extruding soy protein and adding powdered egg and whey as binding agents.

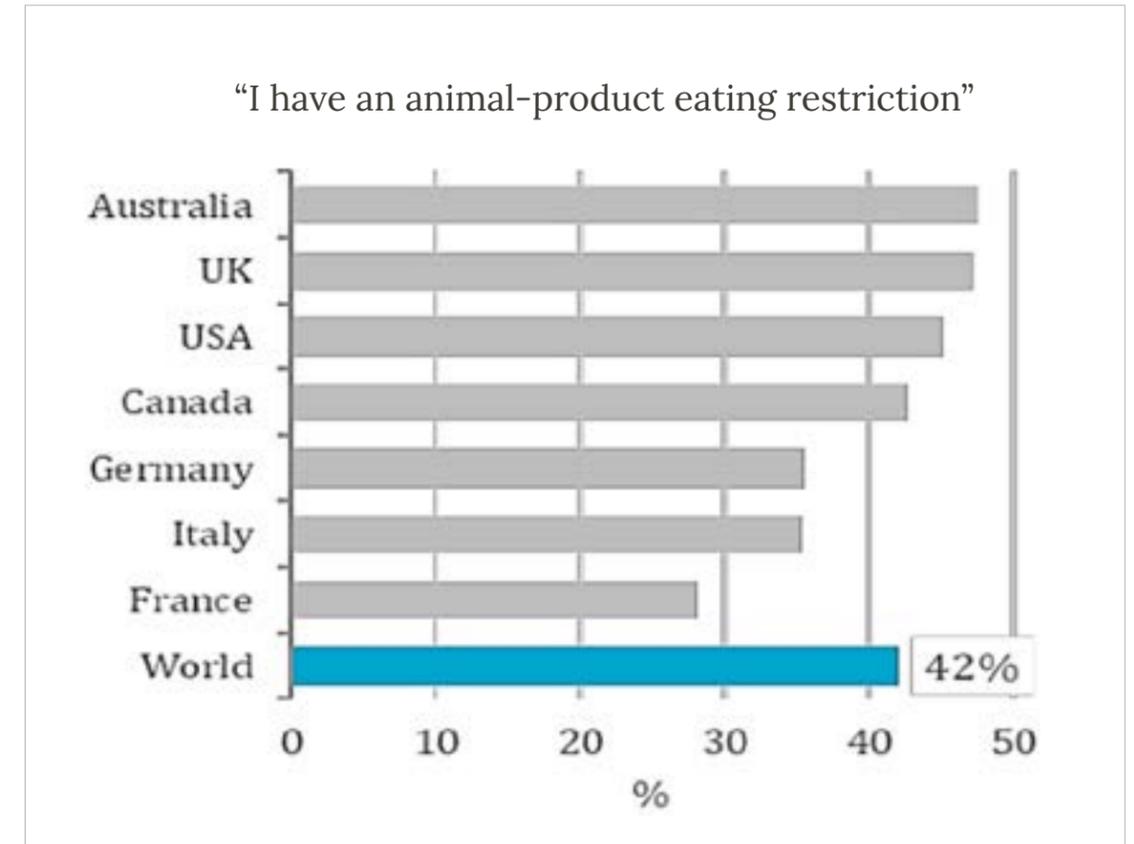
With the advancement of the food industry and changes in consumer demand, current technology allows creation of 100% vegan plant-based meat, free from food additives and with a layered, fibrous structure with a bloody color and juicy appearance. The popularity of artificial meat and significant increase in the flexitarian population have attracted many meat manufacturers in Taiwan to invest in developing plant-based meat. Trends indicate it will be in high demand with both vegetarians and flexitarians.

Crops that contain plant-based protein, such as soybeans and peas, are common sources to develop alternative proteins.





## Flexitarian Consumers Restricting Animal-Based Products (2020)



Source: Euromonitor International, The Rise of Vegan and Vegetarian Food, Nov. 2020



## TAIWAN'S VEGETARIAN EVOLUTION

In terms of percentage of vegetarians per country, several Asian countries rank highly. Many people choose to forgo meat due to Buddhist beliefs. In fact, the term for mock meat has been found as far back as the Song Dynasty, where it was recorded that soy was used to create meat-like food.

From 1940 to post-1990s, Taiwan's food industry, affected by economic changes and shifts in the environment, greatly impacted the dietary habits of Taiwanese citizens. This timeline can be divided into three periods. From 1940 to 1970, the food industry was very export-oriented, led by the sugar industry and the canned food industry. Canned food exports declined in the late 1960s and were replaced by the rapidly developing frozen food industry. From 1970 to 1990, the focus shifted to domestic sales due to the rising costs of raw materials and labor. After 1990, with the increase in demand for leisure, education and health awareness due to growing per capita income and information access, vegetarian food products expanded from traditional soy foods to customized and highly functional bionic, or artificial, foods to fit consumer needs.

Traditionally, vegetarian protein sources primarily came from tofu, tofu skin and dried tofu. Later advances in food technology used molds to create meat alternatives from plant-based protein extracted from soybeans and wheat, as well as raw materials such as konjac, or konjac taro, and edible mushrooms. These are the most common ingredients used in mock meat or meat alternatives. The main market of vegetarian products expanded from Buddhist vegetarians, to those in the process of converting to vegetarianism due to recently held religious beliefs. With the creative use of molds and flavoring, plant-based meat products can now satisfy many desires. In Taiwan, products include vegetarian pork, beef, mutton, chicken, fish and sausages. For exports, the food industry has developed vegetarian ham and hot dogs, effectively mimicking the appearance and taste of practically all meat and processed meat products.

### Vegan Hot Dog



## TECHNOLOGICAL DEVELOPMENTS

Starting in 1990, the vegetarian food industry experienced explosive growth in step with industrial progress, with a comprehensive industry structure including raw materials, processing, branding and distribution channels. Upstream importers obtained the raw material of plant-based protein from soybeans and wheat. This was then processed into the material for vegetarian meat through food extrusion. Midstream companies mostly comprise small and medium enterprises that flavor and mold the vegetarian meat. Some of these companies have established their own brand, or work on behalf of the restaurant industry or retail sales channels. Downstream retail channels largely include vendors in traditional markets, as well as wholesale and retail vegetarian food shops.

Technology has unlocked a whole world of possibilities for traditional vegetarian protein sources. Plant-based proteins were adopted to create protein alternatives for vegetarians, and the vegetarian food industry increasingly recognized the value of imported soy protein isolates rich in 7S and 11S. In 1994, the Food Industry Research and Development Institute (FIRDI) established the vegetarian meat development team, dedicated to food technology programs under the Department of Industrial Technology, Ministry of Economic Affairs. The development team used protein extracted from soybeans and wheat to produce the first type of vegetarian meat analogues in place of mock chicken made of tofu, dried tofu or tofu skin.

Vegetarian meat is composed of textured soy protein (TSP) made of soy protein and wheat protein, soy protein isolate, soy milk and flavoring. TSP is a highly processed food product made from concentrated plant protein isolate, other plant proteins and flour that has undergone extrusion cooking. This is a thermo-mechanical process, which combines high shear, high heat and high pressure to form a product that can be molded into various forms for different uses. Soy protein isolate is most commonly used in Taiwan.

Extrusion breaks apart the quaternary structure of plant proteins in a process called denaturation, and as the pressurized molten protein mixture exits the extruder, it is squeezed out into coarse fiber TSP that is dried for convenient storage. Because the fibers of TSP are bigger and more irregular compared to meat fibers, it undergoes a secondary processing where it is soaked, broken apart, pulped, emulsified and gelatinized according to soy protein's physicochemical properties, added with artificial flavoring and coagulating agents, and shaped by pouring into a mold that resembles a meat product. TSP includes soy protein pulp with coarse fiber additives, making it more accurately resemble meat compared to tofu, tofu skin and mock chicken. Using coagulating agents including either eggs or dairy, TSP became a predominant vegetarian product. Since 1994, TSP has been a common Taiwanese vegetarian meat product seen in local and foreign markets like Europe and the United States.

In the East, vegetarianism is closely linked to religious beliefs, while Western influences tend to come from international awareness of environmentalism, health, and animal welfare.

As of 2020, Taiwan has higher expectations for plant-based meat in terms of visual presentation, texture, taste and mouthfeel. The vegetarian lifestyle is decoupled from traditional religious views, and demand for plant-based and alternative proteins has shot up due to global environmental issues. Consumers prefer natural foods without additives, and look for certifications of sustainable foods and processes.

The number of flexitarians who care about global issues, personal health and low carbon emissions has skyrocketed, driving development of vegetarian meat products with fewer or no additives. Advances in extrusion technology are made to meet market demands, and these advances have led the way to developing TSP with finer fibers, like those in vegetarian chicken strips. This second-generation vegetarian meat greatly improves upon the chewiness and appearance compared to the first generation. Even better, it doesn't require secondary processes, radically reducing the number of additives and artificial flavoring added, allowing consumers to purchase ready-to-cook vegetarian meat.

Mock meat using plant-based protein has undergone a revolutionary change in appearance and texture, from dried TSP with single directional fiber that required secondary processing, to high-moisture vegetarian meat with coarse single directional fiber that doesn't require secondary processing. Now, third generation plant-based meat not only looks like meat, its thin, short fiber bundles provide a taste and texture similar to actual meat.

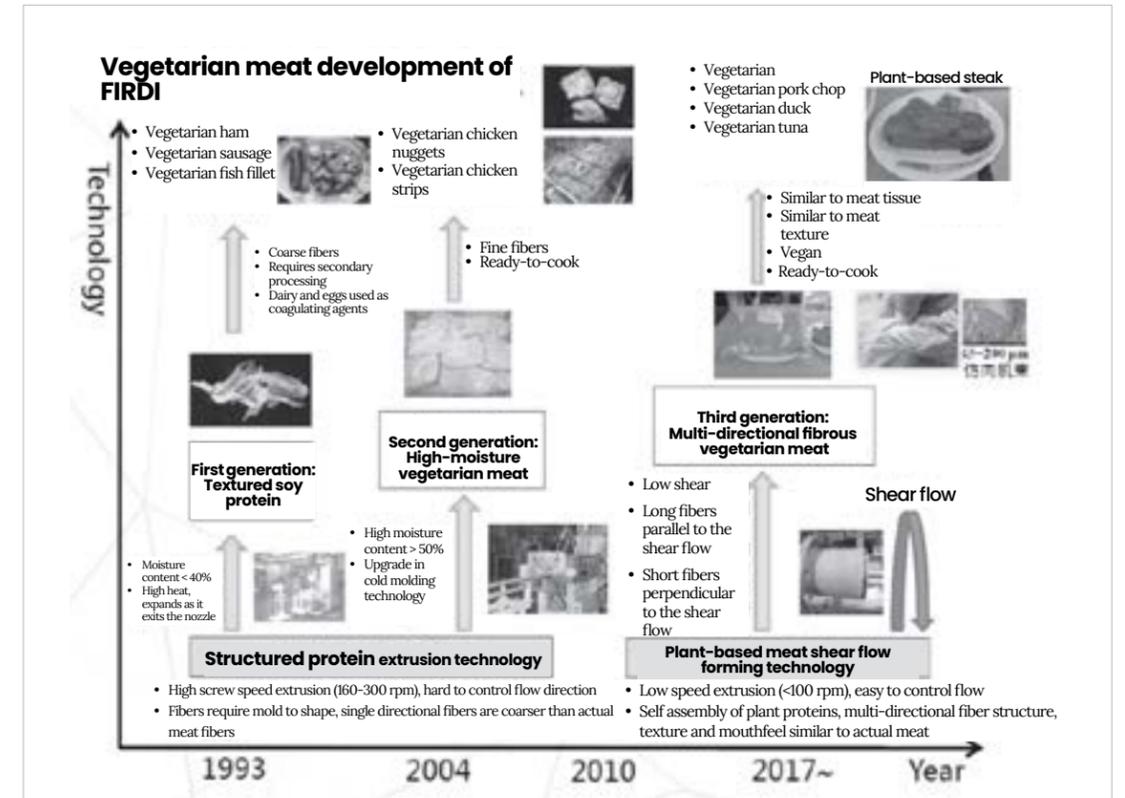
### Textured Soy Protein with Coarse Fibers



### High Moisture Vegetarian Chicken Strip



## Evolution of Plant-Based Meat in Taiwan



Source: Food Industries, Vol. 5111

Taiwan's traditional processed vegetarian products have moved toward functionality. In addition, advances have been made using additives such as red yeast rice, DHA-containing microalgae and vitamins to create vegetarian ham. Producers are also using different ingredients to recreate meat in textures and appearances in innovative new ways, such as steak and chicken nuggets, as well as popular local cuisine, including Taiwanese-style popcorn chicken, Taiwanese sausages and tonkatsu, or Japanese fried pork cutlet. Riding high on the trend led by U.S. plant-based meat companies Beyond Meat and Impossible Foods, producers are incorporating plant-based meat with multi-directional fiber structure into common Asian and Chinese dishes. This cuisine heavily feature plant-based minced pork in foods such as vegetarian dumplings, pot stickers, minced pork sauce and bitter melon stuffed with minced pork.

## FUTURE DEVELOPMENT

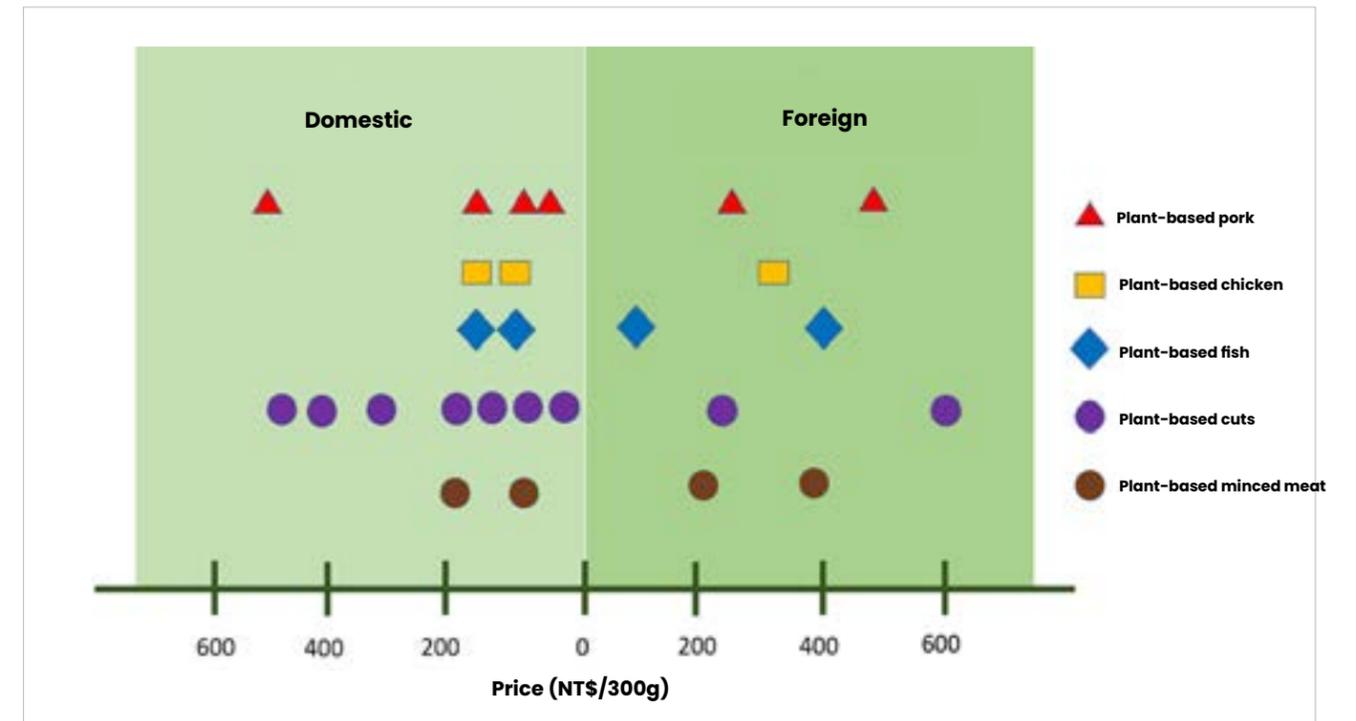
According to The Good Food Institute, the plant-based meat market grew 27% in 2020 over the previous year. In total, the global market for meat substitutes is set to grow to \$23.4 billion by 2024, according to market research company Euromonitor. Barclays, a multinational investment bank, projects that the global vegan meat market could hit \$140 billion in sales by 2029.

In 2020, Taiwan distribution channels for plant-based meat expanded from traditional markets to retail, franchises and restaurants, which has driven innovation and boosted exposure to consumers. As the international trend toward plant-based meat sweeps into Taiwan, the visibility of products imported from North America, Germany and Hong Kong by local retailers and restaurants as well as co-branded products, have gained traction. This has led Taiwanese brands to improve their competitiveness by adopting new sales strategies, expanding and innovating product lines and creating eye-catching, convenient and ready-to-eat packaging, working together with convenience stores. Companies in other industries, such as meat and biotech, have also joined the plant-based meat market using their innovative technologies.

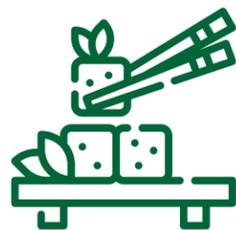
### Tiawanese Distributions Channels for Plant-Based Meat



### Plant-Based Meat Pricing Analysis in Taiwan



Source: Taiwan 2021 Food Industry Yearbook



The COVID-19 pandemic disruption of meat and seafood supply chains have served to accelerate the shift from traditional meat to plant-based meat. Moving forward, producers of plant-based meat will seek to reduce the number of additives and create high-fidelity products that match the muscle texture, juiciness, appearance, color and mouthfeel of different cuts and types of meat. It is also important to develop products with a low carbon footprint.

The numerous people and celebrities investing in plant-based meat are shining a global spotlight on the impacts of climate change, thereby attracting experts from various fields to develop plant-based products. With time and the advancement of technology, plant-based meat products will become more affordable and accessible.

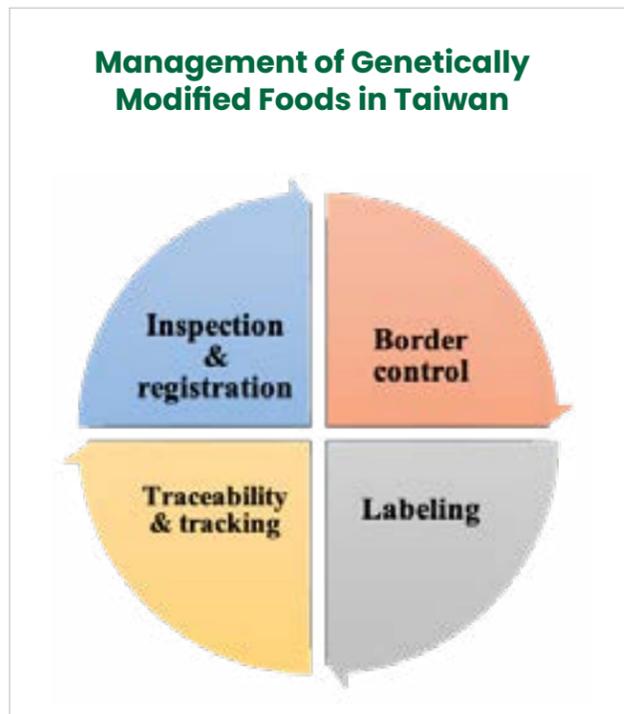
# Regulations

In Taiwan, around 2.5 million MT of soybeans are imported per year according to government records, and most of them are genetically modified (GM). The central competent authority for the management of GM food is the Taiwan Food and Drug Administration (TFDA), part of the Ministry of Health and Welfare. According to the Food Safety and Hygiene Management Law, GM food needs to be managed, including inspection, registration, import and border management, chain traceability and product labeling.

Since 2002, 29 transgenic soybean events have been approved for food use by the Taiwanese government. For soybeans and soybean-related products, genetic modification and non-gene modification have separate, exclusive numbers for border management. Food and food additives containing GM ingredients must be declared.

In recent years, Taiwan has produced only a few thousand metric tones of soybeans in total, while by contrast approximately 2.5 million MT are imported each year. While Taiwan has huge demand for soybeans, it has to rely almost entirely on imports, most of which are GM soybeans. In Taiwan, some soybeans are made into tofu, dried tofu, soy milk or plant-based meat, but most imported soybeans are used for oil extraction, and the residual soybean meal left after extraction is used for animal feed.

The central government agency in charge of GM soy product management is the TFDA. The main legal basis for GM food management is the Act Governing Food Safety and Sanitation, the 2014 amendment of which stipulates provisions regarding the inspection, registration, importation, border control, traceability and flow tracking of food raw materials and the labeling of GM food products.



## INSPECTION AND REGISTRATION

According to Paragraph 2, Article 21, of the Act Governing Food Safety and Sanitation, “None of the genetically modified food raw materials shall be used as food raw materials without being reviewed by the central competent authority in the health risk assessment, filing product registration with and procuring a permit document.” Because of this provision, which came into effect in 2001, the manufacture, processing, preparation, re-packaging, import or export of GM soy and maize products must be inspected by and registered with the TFDA. The 2014 amendment to the act expanded the scope of GM food raw materials that are subject to more stringent regulation, but the GM soybean management regimes remain unchanged. For GM soybeans to be used as food raw materials requires passing a health risk assessment, filing a registration and obtaining a permit.

The current version of Taiwan’s Food Safety Assessment Methodology for Genetically Modified Food was promulgated on September 9, 2010. It is based on the Guideline for the Conduct of Food Safety Assessment of Foods Derived from Recombinant-DNA Plants (CAC/GL 45-2003), developed in 2003 by the Food and Agriculture Organization (FAO), the World Health Organization (WHO) and the CODEX Alimentarius Commission. The Taiwanese methodology provides a clear definition of gene modification techniques: Techniques using genetic engineering or molecular biological technology to transfer genetic material into living cells or organisms, which results in genetic modification. However, this excludes techniques such as traditional breeding, fusion of cells and protoplasts of the same species, hybridization, mutagenesis, in-vitro fertilization, somatic mutation and chromosome doubling. While the methodology covers food products containing GM plants and GM microorganisms, those containing GM animals fall outside its scope.

Health risk assessments and the inspection and registration of GM soybeans must be carried out in reference to the Food Safety Assessment Methodology for Genetically Modified Food. A Genetically Modified Food Application is submitted, detailing product specifications, basic information on genetic modification, composition analysis of key ingredients, toxicity, allergenicity and nutritional composition. To ensure the safety of GM soy food products, the data are closely reviewed on a case-by-case basis and inspection is carried out to verify the gene expression of transgenic lines.

The management of food products containing GM plants with stacked traits developed by conventional breeding methods follows the Guidelines for Food Safety Assessment of Food Products Derived from Genetically Modified Plants with Stacked Traits, promulgated on May 6, 2008. These guidelines classify GM plants with stacked traits into three categories. For food products derived from the plants in categories 1 and 2, businesses must provide bridging study data and, where necessary, data on protein safety assessment and animal feeding trials.

However, food products derived from category 3 plants, those combining several genes with inserted traits whose functions belong to the same biosynthetic pathway, are assessed using the same methodology as those derived from single-trait GM plants.

To process applications for the inspection and registration of GM food, the TFDA has a review panel consisting of 17 to 23 members who are responsible for reviewing the documents and data that businesses provide, inspecting the safety of GM food products and providing written review opinions. As of November 5, 2021, a total of 154 GM events have been approved for use as food raw materials, of which 29 were soybean products. Those include 17 single-trait events and 12 stacked events, as shown.

The ten single-trait GM soybeans approved in Taiwan consist of three with an insect-resistant trait, seven with a herbicide-tolerant trait, one with both insect-resistant and herbicide-tolerant traits, and three with modified oil or fatty acid composition traits. The GM food permit is valid for five years, after which time applicants must seek an extension.

### Soybean Traits Approved in Taiwan

Name	Transgenic event	Date of authorization
Glyphosate-tolerant GM soybean	40-3-2	7/22/2002
Glufosinate-tolerant GM soybean	A2704-12	5/1/2007
2nd-generation Glyphosate-tolerant high-yield GM soybean	MON89788	12/28/2007
High-oleic GM soybean	DP-305423-1	7/23/2010
Glufosinate-tolerant GM soybean	A5547-127	8/31/2010
Insect-resistant GM soybean	MON87701	7/6/2011
High-oleic GM soybean with low level of saturated fat	MON87705	2/8/2013
Dicamba-tolerant GM soybean	MON87708	4/2/2013
Imidazolinone-tolerant GM soybean	BPS-CV127-9	4/16/2013
Stearidonic acid (SDA) producing GM soybean	MON87769	12/16/2013
Herbicide-tolerant GM soybean	DAS-68416-4	12/16/2013
Glyphosate- and isoxaflutole-tolerant GM soybean	FG72	12/24/2013
Herbicide-tolerant GM soybean	SYHT0H2	3/28/2014
Herbicide-tolerant GM soybean	DAS-44406-6	9/4/2014
Insect-resistant GM soybean	DAS-81419-2	5/5/2015
Insect-resistant GM soybean	MON87751	1/29/2016
Cyst nematode-resistant and herbicide-tolerant GM soybean	GMB151	9/13/2021

Source: Ministry of Health and Welfare

### Stacked Soybean Traits Approved in Taiwan

Name	Transgenic event	Date of authorization
Stacked-trait GM soybean	DP-305423-1 x 40-3-2	6/11/2012
Insect-resistant and Glyphosate-tolerant stacked GM soybean	MON87701 x MON89788	9/24/2012
Stacked GM soybean with low saturated fat, high oleic acid, and Glyphosate tolerance	MON87705 x MON89788	9/4/2014
Dicamba- and Glyphosate-tolerant stacked GM soybean	MON87708 x MON89788	9/24/2014
Stacked-trait GM soybean	DAS-68416-4 x MON89788	2/26/2015
Stearidonic acid (SDA) producing and Glyphosate-tolerant stacked GM soybean	MON87769 x MON89788	6/26/2015
Stacked-trait GM soybean	FG72 x A5547-127	5/13/2016
Stacked-trait GM soybean	DAS-81419-2 x DAS-44406-6	7/12/2016
Stacked-trait GM soybean	MON87705 x MON87708 x MON89788	7/31/2017
Stacked-trait GM soybean	MON87751 x MON87701 x MON87708 x MON89788	9/10/2017
Stacked-trait GM soybean	MON87708 x MON89788 x A5547-127	5/29/2018
Stacked-trait GM soybean	DP-305423-1 x MON87708 x MON89788	7/8/2019

Source: Ministry of Health and Welfare

## BORDER CONTROL AND IMPORT DUTY

In 2014, the Act Governing Food Safety and Sanitation was amended to strengthen import management and border control of GM food. New entries were also made in the Commodity Classification Code (CCC Code) to classify GM food raw materials. GM and non-GM soybeans and soybean meal products are now under different codes.

In 2019, in response to continued demand from consumer advocacy groups that the government distinguish between food-grade and feed-grade soybeans, the Ministry of Economic Affairs added two new entries to Taiwan’s CCC Code: “Genetically modified soybeans, for feeding” and “Non-genetically modified soybeans, for feeding.” Soybeans imported under the classification of animal feed may not enter the human food chain.

However, soybean producers in other countries do not distinguish between food-grade and feed-grade soybeans throughout production from planting to harvest, and soybeans imported to Taiwan are usually transported in bulk ships or container ships. Taiwanese food companies select beans by appearance, with plumper whole beans mostly made into soy products such as soy milk and tofu.

When importing GM soybeans to Taiwan, importers must provide the declaration document, invoice or cargo manifest issued by the suppliers of the export country. Importing non-GM soybeans requires product samples or IP documentation, official non-GMO certification, product or raw material test reports, organic certification by approved country or international agencies or organizations announced by the Council of Agriculture under the Executive Yuan, and other documents specified by the TFDA.

Average food prices have continued to rise. This can be attributed not only to inflation, but also to increased demand for meat. With the upward pressure on soybean prices, Taiwan has slashed soybean tariffs from 7% to 3.5%, 3%, 1.5% and now all the way to 0%, which has helped businesses reduce costs. Animal feed producers, soybean processors, traders and the food industry no longer pay tariffs on imported soybeans, and there are no restrictions on import qualifications or quantity. Although the government's tax revenues will fall by several billion Taiwan dollars, the zero-tariff measure will help businesses reduce production costs and keep prices in Taiwan under control.

### Soybean Ingredient Codes

CCC Code	Goods
12081000104	Flours and meals of genetically modified soya beans
12081000202	Flours and meals of non-genetically modified soya beans
12019000916	Other genetically modified soybeans, whether or not broken
12019000925	Other non-genetically modified soybeans, whether or not broken
12019000211	Genetically modified soybeans, for feed, whether or not broken
12019000220	Non-genetically modified soybeans, for feed, whether or not broken

Source: Customs Administration, Ministry of Finance



According to Paragraph 1, Article 9, and Paragraph 3, Article 21, of the Act Governing Food Safety and Sanitation, suppliers of GM food raw materials have to set up a traceability or tracking system. This provision became mandatory on February 5, 2015. Certificates, documents, and records of GM food and related products must be retained for at least five years.

Suppliers are also required to upload data for the previous month to the government's food traceability and tracking system by the tenth day of each month. The uploaded data must include the following.

- Raw materials
- Product details, including the soybeans' transgenic line
- Identification markings
- Product flow
- Records for internal traceability system management, with effective connections for tracing the source and tracking flow

In addition, food businesses must ditch hard-copy uniform invoices for electronic invoices. Setting up a traceability and tracking system will enable food businesses to instantly trace the source of raw materials and track the flow of products. If concerns arise regarding a product, it can be quickly recalled, which will make food safety management more efficient.

## TRACEABILITY AND TRACKING

Paragraphs 1 and 3, Article 7, of the Act Governing Food Safety and Sanitation stipulates that suppliers of GM food raw materials implement self-management and enact food safety monitoring plans to ensure food sanitation and safety. Testing of GM food raw materials became mandatory on July 31, 2015, while food safety monitoring plans have been required since July 31, 2017.

GM soybean importers who import 40 MT or more within three months or in a single batch are required to formulate food safety monitoring plans. All imports of GM soybeans are subject to mandatory testing, regardless of import volume. Items to be tested include mycotoxins, pesticide residues, heavy metals and other items related to food hygiene. Testing must be conducted at least once every quarter or every batch, and the records of test results must be kept for at least five years.



Source: Food and Drug Administration, Ministry of Health and Welfare

## PRODUCT LABELING

GM food labeling requirements were first announced in 2001. At that time, labeling was only mandatory for packaged food using GM soybeans or GM maize as raw materials, while highly processed products that did not contain transgenic fragments or transgenic proteins were exempt. Moreover, an adventitious GM presence of 5% was allowed in non-GM food.

In 2014, the Act Governing Food Safety and Sanitation was amended. Articles 22, 24 and 25 stipulate that the presence of GM raw materials must be labeled in packaged food, food additives, bulk food and places directly supplying food. Labeling requirements were introduced in three phases and reached full implementation on December 31, 2015. Non-GM food raw materials with an adventitious GM presence exceeding 3% are regarded as GM food raw materials.

For highly processed products that directly use GM food raw materials but no longer contain transgenic gene fragments or transgenic proteins in the final products, including soybean oil and soy sauce, exemption from GM labeling no longer applies. These products now have to carry the GM label with statements such as “genetically modified,” “contains GMO ingredients” and “uses GM ingredients.” Labels may not measure less than 2 mm in either length or width, and the font used for the label must be clearly distinguishable from other text.

The labeling provisions are now more stringent: The scope was expanded from packaged food to food additives and bulk food, the allowable adventitious

presence of GM ingredients was lowered from 5% to 3% and highly processed food products are no longer exempt from GM labeling.

According to Items 7 and 9, Paragraph 1, Article 47, of the Act Governing Food Safety and Sanitation, inadequate labeling of GM food carries a fine of between NT\$30,000 and NT\$3 million. In addition, under Paragraph 1 of Article 45, any false, exaggerated or misleading labeling, promotion or advertisement of GM food products is punishable by a fine of between NT\$40,000 and NT\$400,000. Severe violations or repeat offenses may lead to the termination or suspension of business, or the revocation of all or some of the items listed in the company registration, business registration, factory registration or registration of the food business. If the registration of a food business is revoked, the business may not reapply for new registration for one year.

Non-GM soybean products may be labeled “Non-GMO” or “Not GMO” at the seller’s discretion, but not all food ingredients can carry such labels. Only when food raw materials also have GM counterparts approved in Taiwan, such as maize, canola, sugar beet and cotton, may they be labeled non-GMO. For example, although GM wheat, rice, papayas, potatoes and pumpkins have been authorized in other countries, their non-GM counterparts may not be labeled as non-GMO in Taiwan. This is to avoid confusion among consumers, to ensure they do not mistakenly believe that GM foods that have not been approved in Taiwan are being sold in the domestic market.



### Food Labeling



Source: Food and Drug Administration, Ministry of Health and Welfare

The Ministry of Health and Welfare has set up a comprehensive system, including border controls and labeling requirements, to regulate GM soybeans, which make up most of the 2.5 million MT of imported soybeans, and review their safety on the basis of scientific evidence. Since 2002, 29 types of GM soybeans have been approved for use in food, but Taiwanese consumers are still very vocal in their opposition to GM food. On December 14, 2015, the legislature passed amendments to the School Health Act, stipulating that GM food raw materials and their primary processed products may not be used in meals served in schools, from elementary school to university, effectively banning GM soybeans and tofu or soy milk made from such beans from school campuses.

Apart from the Ministry of Education’s opposition to the serving of GM food in schools, the Council of Agriculture has also stressed that it wants to promote organic agriculture and has banned the cultivation of GM crops. The Ministry of Health and Welfare is the only government agency that has authorized the use of GM crops in food and is disseminating truthful information about GM food to the public. The fact that the same GM food is treated differently by different government agencies has resulted in a lower level of public trust in government. In the future, Taiwanese consumers are likely to continue to look at GM food with suspicion.

# Sustainable U.S. Soy Logo Use

In order to control the stability of the process and the consistency of the final soy products, the quality of food-grade soybeans plays a very important role in purchasing for the soy product manufacturers in Taiwan. Therefore, the United States Standards for Soybeans and Identity Preservation are key references for soybean variety selection.

Most U.S. farmers grow soybeans that meet the requirements of the Soybean Sustainability Assurance Protocol (SSAP) defined by U.S. Soy.

For the food companies in Taiwan, the Sustainable U.S. Soy logo product package labels help to build a strong brand image and even enhance the reputation of the enterprises as the idea of sustainability is a part of corporate social responsibility (CSR). However, the Sustainable U.S. Soy logo is not yet widely recognized for a few reasons. Taiwanese consumers are just getting to know about the importance of sustainability. Meanwhile, many people have inaccurate perceptions about environmental protection; they think it should be corporate responsibility without recognizing the added value to the brand. Furthermore, there are too many certified labels with various purposes, which cause consumer confusion.

In Taiwan, the plant-based food market has been expanding rapidly in recent years, especially soy milks. Taiwanese people are paying more attention and taking actions in response to environmental issues. What's more, USSEC Taiwan has continued promoting the advantages of Sustainable U.S. Soy through online and offline media. The Sustainable U.S. Soy logo has potential to become a recongnized logo of sustainability in the near future.

Soybeans produced in the United States and soy products produced in Taiwan have developed in conjunction with one another for many years. The United States is endowed with large tracts of fertile soil and has been recognized worldwide as a leader in agricultural management practices and technology. Conducting long-term research into soybean breeding and development has led the United States to produce many different varieties of soybeans, each with different traits. This diverse array has, in turn, allowed manufacturers of soy-based foods to select the soybean variety most suitable to their needs and processing requirements. Furthermore, the U.S. Department of Agriculture (USDA) has established standards that not only introduce clear, comprehensive regulations on how to determine soybean grades, but that also establish third-party auditing procedures to ensure the purchase of quality soybeans.

USSEC has promoted IP soybeans. IP soybeans must meet rigorous quality standards to ensure buyers receive pure variety, high quality and traceable soybeans. Large Taiwanese companies that use U.S. soybeans not only insist on purchasing top-grade U.S. No. 1 soybeans, they also highly value the use of such traceability systems.



In addition to being concerned about food safety, Taiwanese companies also want growers to ensure they are planting a single, uniform soybean variety, and that this variety, remains uniform throughout the production chain. Variety purity is critical because it represents a guarantee of the soybean composition specifications such as protein, and it is also beneficial to controlling the traits and quality of the end product. Furthermore, because the origin of IP soybeans is clearly recorded, Taiwanese consumers can be assured they are receiving what the label claims.

The Taiwanese sector has realized the grading and IP designation processes can serve as means of controlling quality. As a result, these processes help relevant parties to stay atop of global trends and have guaranteed access to export channels.

In 2016, USSEC began a long-term campaign to promote the Sustainable U.S. Soy logo, with funding from the soy checkoff. USSEC encouraged and supported food manufacturers to feature this logo on their product packaging as a way to improve brand image and to serve as a symbol of CSR.

Over the past few decades, the USDA has introduced laws aimed at supporting and encouraging farmers to adopt sustainable farming practices, and as a result, 95% of U.S. land used for soybean farming currently meets federal government requirements for sustainable production. When the Sustainable U.S. Soy logo first came out, the soy foods sector in Taiwan strongly approved of the firm vision and concerted efforts of USSEC to encourage environmentally sustainable practices. In fact, it was a Taiwanese food company that became the first in the world to use products verified by the U.S. SSAP. As a result, this company's soy milk products went from being virtually unknown to being ranked as the third most popular soy milk in Taiwan.

In addition to improving corporate image, the use of SSAP-verified soybeans helps food companies fully realize their corporate policies and missions. However, at the time SSAP verification first emerged, most consumers showed little interest, revealing that adoption of sustainability logos and seals does not guarantee a company rapid growth. Potential reasons for consumer disinterest can be grouped into the following categories.

### OVERUSE OF LOGOS AND SEALS

Following a succession of food safety incidents in Taiwan, many food manufacturers have sought to gain consumer trust through obtaining recognition by certification schemes such as Food Safety System Certification 22000 (FSSC 22000), Safe Quality Food (SQF) and International Taste Quality Institute (ITQI) as well as obtaining carbon footprint certificates or seals. Recognizing everything from quality and taste to environmental sustainability and beyond, the presence of certification symbols on nearly every brand's packaging often overwhelms consumers with information.

Market surveys have found that consumers can only somewhat remember certification and verification symbols for certain products. However, they tend to be unclear about the actual name and meaning of the symbol in question. Even after extensive advertising campaigns, consumers are often still unable to correctly identify these symbols.

### PREMATURE MARKETING OF SUSTAINABILITY

In 2021, Oatly prominently introduced its oat milk into the Taiwanese market by promoting it as an alternative to cow's milk. Oatly's first step was to work with Starbucks and 7-Eleven in order to promote oat milk as an alternative for lattes. Next, Oatly partnered with Haidilao Hotpot to create an oat milk hotpot broth. As a result of the significant resulting media coverage, Oatly successfully created more opportunities for the introduction of further plant-based milk products in Taiwan.

Furthermore, Oatly has invested in media aimed at spurring discussions about environmental sustainability. These discussions highlight the fact that, in comparison to livestock and poultry products, plant-based alternatives produce lower greenhouse gas emissions, require a smaller area of land, and consume less energy. By highlighting this comparatively advantageous carbon footprint, Oatly has tried to call on Taiwanese consumers to place more emphasis on environmental sustainability. Consumers, however, may recognize that environmental sustainability is important and directly impacts the survival of future generations, but they are not necessarily willing to spend more to support the cause.

### ENVIRONMENTAL CONSERVATION IS A RESPONSIBILITY, NOT A MEANS TO ADD VALUE

Over the past several years, pollution and climate change have continued to pose a threat to humanity. Environmental conservation has, thus, become a common goal and focus of discussion worldwide. In 2014, Taiwan's Financial Supervisory Commission began to require listed companies to compile CSR reports in hopes of directing greater corporate attention to social responsibility.

An important part of a company's overall image, CSR encompasses critical issues such as environmental conservation and company policies. However, most people tend to equate social responsibility and environmental conservation efforts with serving the public good. Since these efforts are recognized as an expectation or basic responsibility, they are often taken for granted and are not seen as directly related to the adding of value to a product.



Starting in 2013, the soy milk market began to expand rapidly around the world, and Taiwan was no exception. Fitness trends were one reason behind this growth, as was the COVID-19 pandemic. In response to COVID-19, soy milk has continued to grow in popularity. Nearly 58% of all people in Taiwan now drink soy milk, inching closer to the 70% of all people that drink cow's milk. In addition, Taiwanese food companies have continued to build off of Oatly's success by releasing a range of oat milk products throughout the latter half of 2021. At the same time, plant-based milks continued to receive a lot of attention in the market, leading many to anticipate 2022 to be a strong year for plant-based milks.

Over the past few years, USSEC has quietly continued to engage a wide range of experts, organize forums and participate in various exhibitions. Moreover, USSEC has continued to reach out to industry and consumers to promote the significance of the Sustainable U.S. Soy logo. To this end, media outlets and social media platforms feature reports on U.S. sustainable production of soy. These articles and reports, published both online and offline, educate consumers on the Sustainable U.S. Soy logo and use of U.S. Soy, which they often see noticeably featured on processed soy food packaging.

In the near future, concern about sustainability issues is expected to reach an all-time high in Taiwan. Finally, after a long wait, the Sustainable U.S. Soy logo may be set to become a trusted and esteemed symbol of certified sustainability.

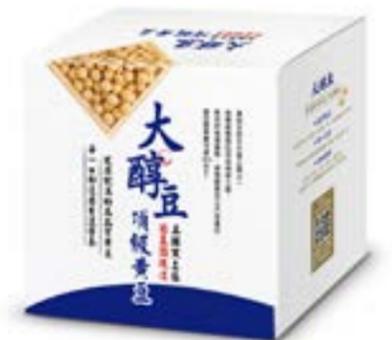
Taiwan-Made Dried Bean Curd Sticks or Tofu Skin



Taiwan-Made Dougan or Firm Tofu



Product Labeled "Made from U.S. Soybeans"



## CREDIT: USSEC TAIWAN

## SOURCES

Japan Tofu Association, Effects, Nutritional Value of Okara

[Okara](#)

September 2021 Monthly Report, Kantar Group

Shadow demand, or unmet demand, cannot be accurately shown. It must be based on expert feedback. USSEC staff both provides and receives this industry insight and feedback.

Taiwan Act Governing Food Safety and Sanitation

Taiwan: Oilseeds and Products Annual, U.S. Department of Agriculture Foreign Agricultural Service

Taiwan's Economic Development

The Industrial Heritage in Taiwan

USSEC Country Snapshot: Taiwan

USSEC industry insight





# Thailand

## SOY FOODS REPORT



# Thailand

Soy food products are a big part of the Thai diet, due to religious influences in Thailand — particularly Buddhism. As a majority-Buddhist country, vegetarianism is common in Thailand,<sup>1</sup> which drives the demand of soy as a protein source in diets. There are indigenous Northern Thai food products such as *Thua Nao*,<sup>2</sup> fermented soybeans used as a side dish and flavour enhancer, as well as soy products introduced by Chinese immigrants between 1825 and 1910<sup>3</sup> such as *tao chiao*, which is fermented soybean paste, soy sauce and tofu.<sup>4</sup>

Soy food products are omnipresent in Thailand. They are available through wet-selling handmade tofu and soy-based drinks and desserts, as well as from modern supermarkets and online grocers.<sup>5</sup>



Wet Market vendor in Bang Saphan Market Selling Tofu  
Source: alamy



# Consumption Patterns

## SOY DRINKS AND TOFU

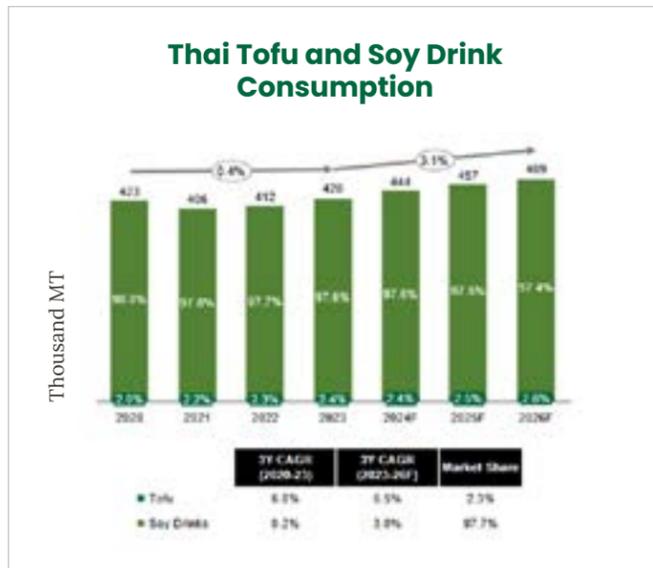
According to Euromonitor, consumption of soy drinks in Thailand is much higher than tofu. The retail market shares between soy drink and tofu are reported to be 97.7% to 2.3%, respectively. Thailand's total soy drink consumption is the highest in Southeast Asia at 428,000 metric tons in 2023. Consumption is expected to grow at a three-year compound annual growth rate of 3.1% from 2023 and 2026.<sup>6</sup>

The popularity of soy drinks in Thailand is also reflected in the per capita consumption of 5.8 kg (12.8 pounds) in 2023, which is again the highest in Southeast Asia. Soy drink consumption per capita is expected to reach 6.3 kg (13.9 pounds) by 2026, at a three-year compound annual growth rate of 2.9%.<sup>7</sup> This trend is attributed to the importance of soy milk, or *nam tao hoo*, in the Thai diet. Soy milk is considered a staple in a typical Thai breakfast, and it is also commonly consumed as a late-night snack.<sup>8</sup>

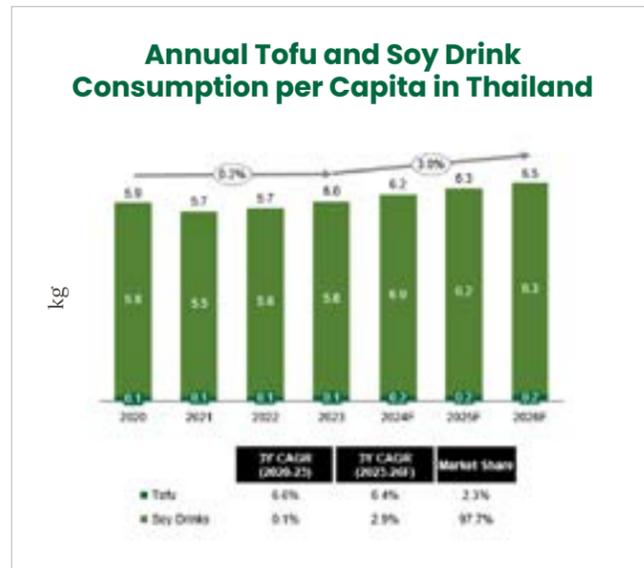


Tofu, though not as popular as soy drinks, continues to grow in consumption and is highly accessible. As reported by Euromonitor, in 2023 Thailand consumed 10,100 MT of tofu,<sup>9</sup> which translates to 0.1 kg (0.2 pounds) of consumption per capita.<sup>10</sup> Tofu consumption grew 6.8% between 2020 and 2023 despite the pandemic, and its market is forecasted to grow another 6.5%.<sup>11</sup> By 2026, tofu consumption per capita is expected to double to 0.2 kg.<sup>12</sup>

Tofu can easily be found in both traditional retail stores such as the wet market, as well as modern supermarkets. It comes in various forms: silken, firm and deep-fried. It is also affordable for a broad range of Thai consumers. Additionally, there has been a growing appreciation for tofu and tempeh as nutritious sources of protein with many benefits.



Source: Euromonitor, 2024



Source: Euromonitor and Y&S analysis



Street vendor selling nam tao hoo with a variety of toppings at the side  
Source: Ewelina Theppaboot



## PLANT-BASED MEAT

Consumption of plant-based meats is common in Thailand, as 92.5% of the population is Buddhist,<sup>13</sup> and they commonly participate in a nine-day vegetarian festival.<sup>14</sup> Krungthai Compass Research Centre expects profits of the plant-based foods industry to grow between 2% and 10% per year to 10% to 35% of the annual market by 2024.<sup>15</sup> Beyond the country's familiarity with vegetarianism and the trendy appeal of plant-based lifestyle, many Thais also consume more plant-based meat due to sustainability concerns, triggered by environmental issues such as the smog crisis.<sup>16</sup>

Barriers<sup>17</sup> to integrating plant-based meats into daily Thai diets include affordability due to lack of economies of scale and inflation, taste, texture and nutritional value. However, as more brands and companies enter the plant-based market, innovation and competition are expected to drive the prices down. Additionally, the global price of soybeans – the main plant-based protein ingredient – is expected to stabilize, lowering the cost of ingredients.

## SUSTAINABILITY

In Thailand, consumers have become more aware of the environmental and health impacts of their food consumption, particularly since COVID-19. A survey by Rakuten revealed that 14% of Thai consumers have reduced their meat consumption and 23% have chosen organic or sustainably produced food items. Additionally, 24% chose brands with known environmentally sustainable practices and values.<sup>18</sup>

Thai producers are also shifting towards being environmentally conscious. Charoen Pokphand Foods (CPF), one of Thailand's largest conglomerates, announced it would be sourcing more sustainable and deforestation-free soy and reached an agreement with Louis Dreyfus to improve traceability of Brazilian soy in their supply chain.<sup>19</sup>

Such moves highlight the seriousness of CPF's commitment in sourcing sustainable soy, which provides opportunities for U.S. Soy. Tofusan, which makes up 3.2% of the retail soy drink market in Thailand,<sup>20</sup> uses only USDA-approved organic soybeans for its soy milk and chooses packaging such as aseptic carton packs, which are known to be more sustainable.<sup>21</sup>

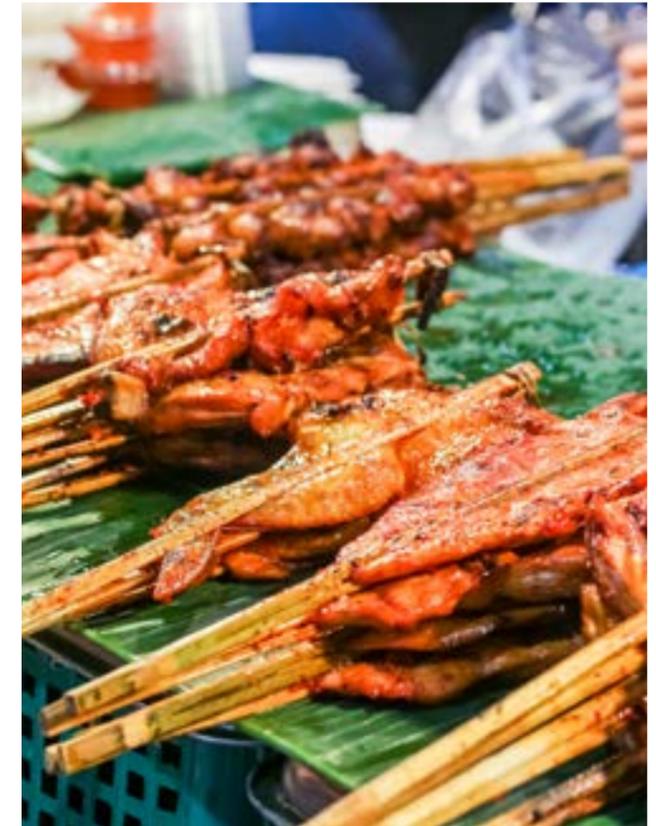


Tofusan's soy milk with USDA Organic logo  
Source: Tofusan Facebook



Beyond the developments in the private sector, the Thai government also introduced the “Future Food” initiatives.<sup>22</sup> Future Food is defined as traceable and innovative food products that are environmentally friendly and good for health, including plant-based food and beverage products. Future Food exports were worth ฿143 billion, or about \$3.9 billion in 2023, and the government aims for 2% to 5% growth by the end of 2024.<sup>23</sup>

In order to support the industry, the government is providing tax incentives<sup>24</sup> for research and development and technology throughout the agrifood industry supply chain, including activities such as adopting advanced technology, manufacturing biomolecules using microorganisms and adopting smart farming systems. The Thai government – through the National Innovation Agency – also runs an incubator and accelerator center with Mahidol University and various Thai food and beverage multinational companies to mentor promising entrepreneurs in scaling up their food tech startups.



# Soy Foods and Beverages Production



## TOFU

Tofu production in Thailand is comprised of both large manufacturers and small and medium enterprises. CP Group – one of Thailand’s largest food and beverage conglomerates – owns three tofu brands, Nurse, Ohayo and CP. Altogether, these brands make up 44.9% of the retail market share.<sup>25</sup>

The largest soy drink producer in Thailand is Lactasoy, a local brand making up 41% of the retail market share.<sup>28</sup> In 2023, Lactasoy invested \$17.3 million into their factory infrastructure and machinery, new product launches and new warehouses. This was to help meet their forecasted growth of 5% to 8%, 80% of which will be from the domestic market.<sup>29</sup>

The second largest player in soy milk production is Green Spot, with two brands – Vitamilk and V-Soy – making up 26.7% and 3.2% of market share, respectively.<sup>30</sup> Green Spot currently has three manufacturing plants in Thailand, with the newest one being built in 2017.<sup>31</sup> The third-largest soy milk producer is Dutch Mill, whose brand DNA makes up 20.8% of the market.<sup>32</sup> They produce non-conventional soy milk flavors such as sweet potato, rice and sesame.



Egg tofu from brand Nurse  
Source: VillaMarket

## SOY DRINKS

In Thailand, 84% of soy milk is in a ready-to-consume format and produced by industrial manufacturers,<sup>26</sup> unlike in neighboring Indonesia where the industry is dominated by small and medium enterprises and the products are sold mostly in semi-processed form. As previously discussed, Thais consume the most soy drink per capita in Southeast Asia, and consumption is still expected to grow. Various companies – from start-ups to leading food manufacturers – try to capture this growing soy drink market segment.<sup>27</sup>



Lactasoy Original  
Source: Lactasoy Thailand

## PLANT-BASED MEAT

Many large food and beverage manufacturers in Thailand have branched into the plant-based meat market. Thai food conglomerate CPF launched Meat Zero in 2021, which uses non-GMO ingredients and 100% recyclable packaging. Their products can be found in various retailers such as 7-Eleven, Aeon, Lotus’s and FamilyMart.

Let’s Plant Meat is another local plant-based meat brand. This company markets products as suitable for both individual customers and restaurants. The brand’s messaging highlights the positive impacts of consuming plant-based meats.

Another key plant-based meat brand in Thailand is Tyson Food’s First Pride, which produces plant-based meat catered to Thai tastes. The Thai Taste Series includes products such as mini Thai spicy patties with lava sauce and spicy fried chicken, while the cooked mince and crispy katsu, which are allium-free and do not contain garlic or onion powder, are suitable to Buddhist vegetarian consumers.



Meat Zero’s product guarantee  
Source: Meat Zero



Let’s Plant Meat’s environmental awareness marketing  
Source: Let’s Plant Meat

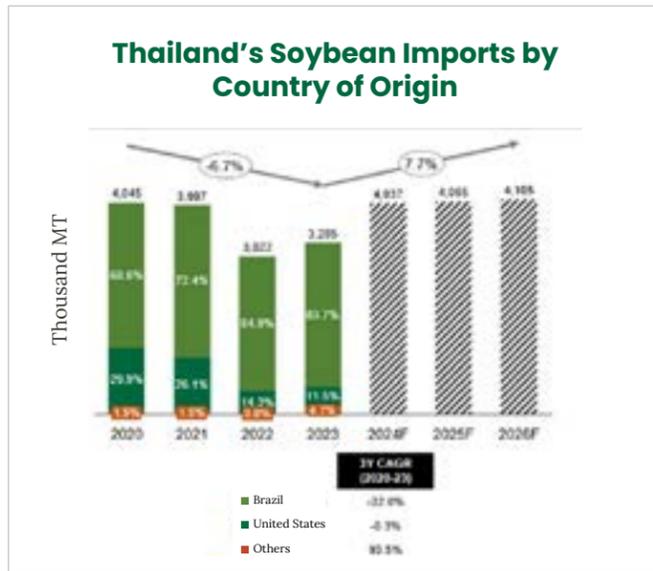


First Pride’s Thai Taste Series  
Source: First Pride

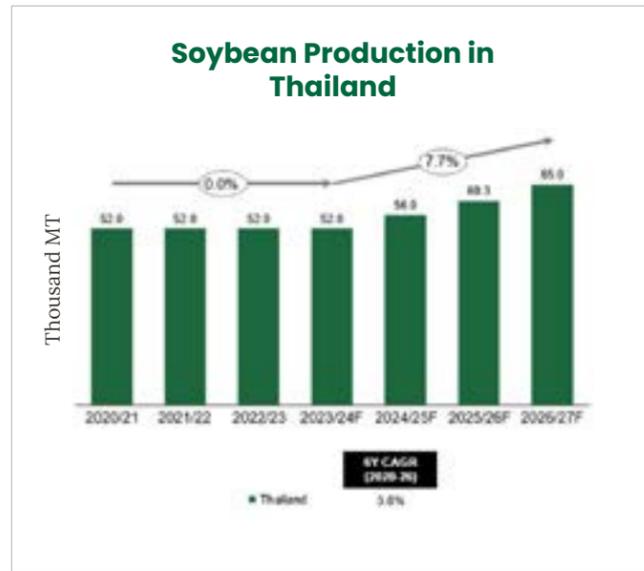
# Soy Supply Chain

## SOYBEAN SUPPLY: IMPORTS AND LOCAL PRODUCTION

Most of soybean supply in Thailand comes from imports. In 2023, Thailand imported 3.285 million MT of soybeans, compared to 52,000 MT of domestically produced soybeans in the 2023/24 season. Of this import volume, 83.7% came from Brazil and 11.5% from the United States. Import volumes from Brazil and the U.S. both declined between 2020 and 2023, at -0.3% for Brazil and -32% for the U.S. Meanwhile, imports from other countries combined grew 93.5%, though their combined market share was less than 5% in 2023. Overall soybean imports are expected to increase from 2023 to 2026 at a three-year compound annual growth rate of 7.7%.<sup>33</sup> This is due to the recovering economy and increased demand for animal feed.<sup>34</sup>



Source: GTA and OECD, 2024



Source: USDA and Y&S analysis

In the market year 2023/24, Thailand expected to produce 52,000 MT of soybeans, a level that has been consistent since 2020/21. However, local production is expected to increase 7.7% by the 2026/27 market year to 65,000 MT. This could be due to government initiatives through the Office of the National Economic and Social Development Board and Thai Soybean Food Producers Trade Association to increase productivity and reduce the cost of soybean cultivation in Chiang Mai and May Hong Son provinces.<sup>35</sup> The soybean production yield in Thailand is 1.6 MT per hectare (23.8 bushels per acre).<sup>36</sup>

Soybeans are cultivated in the northern and northeastern parts of Thailand, with 83% and 17% of production respectively.<sup>37</sup> There are two seasons of soybean production, with each season accounting for about half of the annual production volume. Soybean planting season in Thailand is in May and June, while harvest happens in September and October.



## SOYBEAN SUPPLY CHAIN

Soybean imports typically arrive by sea at Laem Chabang Port and Bangkok Port. Food-grade soybeans arrive in containers, while soybeans for feed arrive in bulk vessels, due to their larger volume. Bulk vessels are received in Laem Chabang Port in Chonburi, an hour and a half away from Bangkok. Food soybeans, typically non-genetically modified or non-GM, comprise 5% of the import volume, while soybeans for feed, typically GM, account for 95% of imports.

Upon port arrival, a soybean shipment will undergo custom checks. For those shipped in containers, checks are done by taking random samples, which can take a few minutes to a few hours. For soybeans in bulk vessels, it may take a few hours to check, followed by a few days to unload the cargo. Once the soybeans are ready for domestic distribution, they are sent in trucks directly to large manufacturers or to traders' warehouses, who will then distribute the soybeans further to small and medium enterprises.

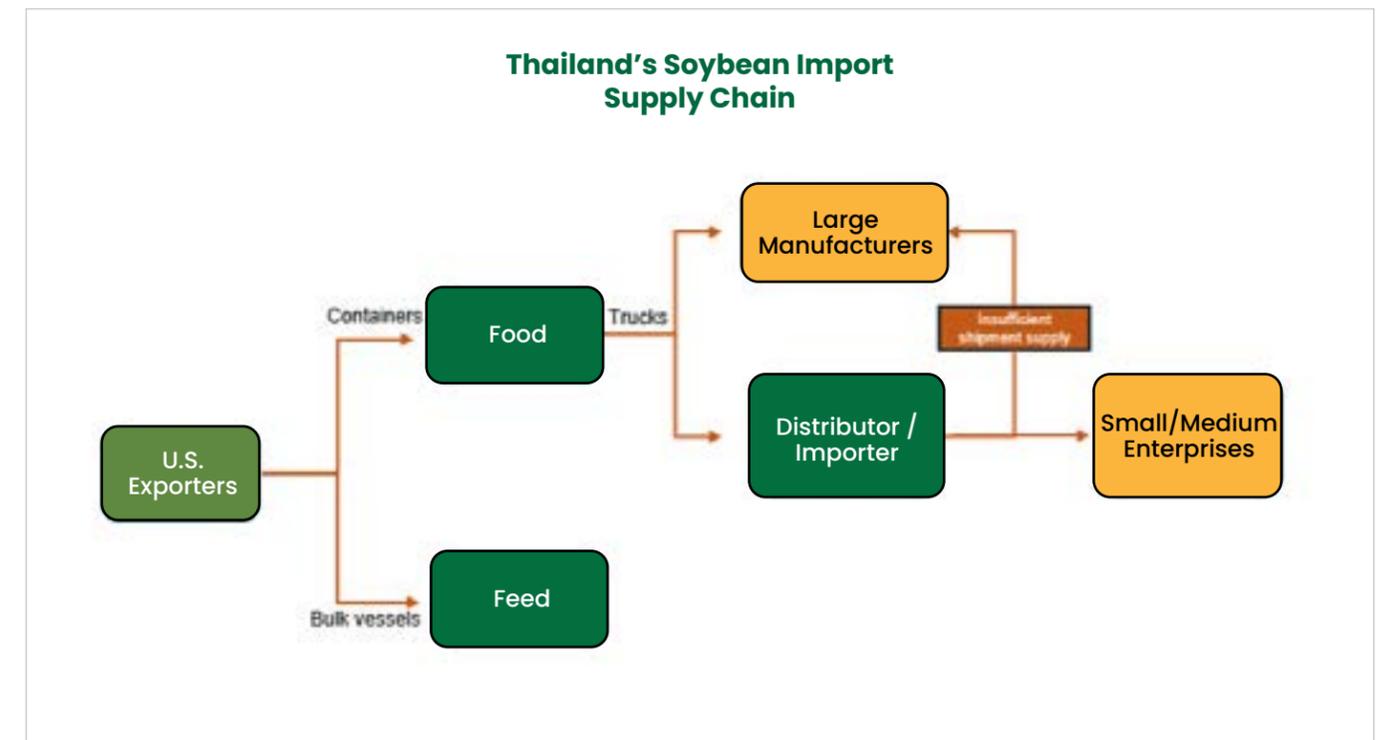
In terms of soybean importers in Thailand, 70% of soybean imports are purchased by large manufacturers directly from U.S. exporters, while 30% go through traders and distributors.<sup>38</sup> Large manufacturers will only purchase from traders when they are short on their import shipments.

Small and medium enterprises procure soybeans through buyer groups operated by local trading firms or trade associations to consolidate orders. The trucks used to transport soybeans locally are provided by a third-party shipping company that handles domestic shipments from port to manufacturer. Distributors tend to handle the administrative aspects of transportation within the country and facilitate direct transportation between the port and small and medium enterprises. Some importers may have warehouses to store soybeans for future distribution.

Food-grade soybeans would be pre-cleaned in the U.S., and any additional cleaning process done in Thailand is up to the importers and manufacturers. Once the soybeans arrive to end users, they may be used immediately or kept in warehouses. Warehouse storage for food products must comply with Thailand's Good Manufacturing Practice standards.<sup>39</sup> Small tofu and soy sauce producers tend to purchase soybeans from domestic producers, who cultivate non-GM soybeans.



Source: logistics-manager.com



Source: USSEC Thailand country representative



# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

### IMPORT REGULATIONS AND TARIFFS

Soy importers are subject to tariff rate quotas set at 10,922 MT, but that could vary based on domestic needs. In-quota tariffs stand at 20%, while out-quota tariffs stand at 80%. However, because Thailand faces difficulty meeting soybean demand through domestic production, the government has allowed unlimited duty-free imports from World Trade Organization member countries for the period of 2023 to 2025. This is only allowed for imports to 16 food processing companies in Thailand and importers who are members of eight trade associations.<sup>40</sup> The trade associations follow.<sup>41</sup>

1. Soybean Oil and Rice Bran Oil Association
2. Thai Feed Mill Association
3. Feedstuff Users Promotion Association
4. Thai Livestock Association
5. Association of Agricultural Trade with Neighboring Countries
6. Association of Agricultural Trade and Processing Industries
7. Food Processors Association
8. Thai Beverage Association

Additionally, to support the policy of reducing import reliance by boosting domestic production of soybeans, the Thai government has lowered the validity period of import permits.<sup>42</sup> Prior to this policy, each import permit lasted for three years. However, import permits applied for in 2024 will only last for one year.

### GENETICALLY MODIFIED SOYBEANS

Thailand allows the import of GM soybeans for processed foods, feed and industrial use. However, GM crops are still not allowed for commercial cultivation in Thailand. In order for GM products to enter Thailand, importers have to gain approval by applying to the Ministry of Agriculture and Cooperatives (MOAC). Four other government agencies are involved in the application process: the Department of Agriculture, the National Center for Genetic Engineering and Biotechnology, the Ministry of Natural Resources and Environment, and the Food and Drugs Administration (FDA).

The Department of Agriculture will evaluate the product's biosecurity risk and control measures. Following that, the MOAC will hold a public hearing regarding the product before minister approval.<sup>43</sup> So far, 15 soybean varieties have been approved for human consumption in Thailand.<sup>44</sup>



## LABELING

### GENETICALLY MODIFIED FOOD

Food products that contain at least 5% GM ingredients are required to declare that they contain GM ingredients. Food products with less than 5% GM ingredients, which have been added intentionally, also have to declare the presence of GM products. An example of a label declaration is, "Tofu produced from Genetically Modified Soybean." Food products without GM ingredients are not allowed to have labels claiming that the product is non-GM or GM-free.

In Thailand, GM foods fall under three groups.

1. Plants, animals and microorganisms that are edited, trimmed, modified, altered genetically or have incorporated new genetic material from biotechnology to be consumed as food.
2. Food products that use ingredients that fall under Group 1.
3. Produced from Group 1, used as food ingredient, additive or nutrient.

Food products that fall under Group 2 that have been imported or registered with the Thai FDA before December 4, 2022, do not need to provide additional import documents for port inspections, though they will still have to comply with Thailand's GM regulations.<sup>45</sup>

### NUTRITIONAL LABELING

As of January 2024, the Thai FDA has made updated their regulations on nutritional labeling.<sup>46</sup> The changes are summarized below.

1. **No. 445, Nutrition Labeling**  
Foods that have nutritional claims, health claims or promotional value will need a nutrition label that includes nutritional information panels, methods for determining serving size, Thai reference daily intakes and principles for claims made.
2. **No. 446, Nutrition Labeling and Guideline Daily Amounts Labeling**  
Foods are required to declare nutrition labeling and guideline daily amounts (GDA) labeling. GDA labeling is a set of information on the energy value of the food product with sugar, fat and sodium amounts in grams. Percentages of the recommended daily intake should also be displayed.<sup>47</sup>
3. **No. 447, Health Claims**  
For food products to be declared with a health claim, they must have nutrients that play a physiological role in growth, development and normal functions of the body, positive contribution to health, or reduce risk of developing diseases or health conditions.

Food products in Thailand can choose to have the Healthier Choice Logo (HCL) on their product packaging. The HCL signifies the product has a better nutrient profile than similar food products. To receive HCL certification, applications have to be submitted to the Healthier Choice Nutritional Logo Certifying Unit and meet the nutrient criteria of their food category, to be approved by certified laboratories. The certification is valid for five years and can be issued to ready-to-eat meals, beverages, sauces, dairy products, instant foods, snacks, ice cream, oil, bakery products and cereals. For example, the criteria for soy milk are shown in the chart below.<sup>48</sup>

**Thai Healthier Choice Logo Criteria for Soy Milk**

Serving Size	Total Sugar
≤ 300ml	≤ 6g/100ml
> 300ml	≤18g

Source: Thailand Ministry of Public Health

**ALLERGENS**

Allergens are defined by the Thai government as a substance that causes an intolerant effect when taken into the body of an allergic person, despite not causing harm to a normal person. Food products with soy ingredients, such as soybean oil, soybean fat and plant esters produced from soybean sources<sup>49</sup> are considered allergens and therefore must be declared. A text example to mention allergens is: “Information for food allergy: contains or may contain \_\_\_\_.”



Ingredient and allergen list on First Pride's plant-based crispy katsu packaging. Source: First Pride



DNA's soy milk, bearing Thailand's Healthier Choice Logo. Source: Dutch Mill Delivery



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# Vietnam

## SOY FOODS REPORT



# Vietnam

Soybeans and soy products have a long history in Vietnam, dating back centuries. Soy sauce was first ordered for use in Hanoi, Vietnam, by Dutch East India Company officers in 1652. Meanwhile, according to historical script *Van-dai Loai-ngu*, soybean cultivation was first mentioned in 1777 under the names *Dolichos Soja*, *dau nanh* and *hoam têu*.

Vietnamese people used their cultivated soybeans to make foods and beverages like tofu, soy milk and soy sauce. During the 1970s and after the Vietnam War, the availability of tofu in Vietnam decreased, but it has since regained popularity as a versatile plant-based protein source.<sup>1</sup>

Further, Vietnam has cities with large Buddhist populations, such as Hue, which observe vegetarianism on specific days, like the first day of the month and days with full moons, in accordance with royal tradition. This has led to the development of a distinct range of plant-based foods such as fermented tofu and *cha lua chay*, or vegetarian ham.<sup>2</sup> Another popular soy-based product is *đậu phụ* or *đậu hũ*, or Vietnamese tofu, which is soft and custard-like, traditionally stored in earthenware jars. Vietnamese tofu is known to be part of the dish *bún đậu mắm tôm*, or tofu with rice noodles and shrimp paste.<sup>3</sup>



Fried Vietnamese Tofu  
Source: Delightful Plate



# Consumption Trends

Vietnam has a growing middle class with rising disposable incomes, which makes up one-third of the population. People in Vietnam spend between an estimated 20% to 45% of their income on food and beverage consumption, which is expected to spur demand in that sector. Further, global trends such as sustainability and healthy eating have increasing influence over Vietnamese consumers. As such, they turn to plant-based products, which are seen as an alternative options to traditional meat and dairy-based food and beverage products, as they may increase fiber absorption and reduce salt, saturated fat and sugar intake.<sup>4</sup>

In 2023, Vietnam consumed 286,000 metric tons of tofu and soy drinks. Out of this volume, 89.2% consisted of soy drink consumption and 10.8% was tofu consumption. There was growth of 0.1% in total consumption from 2020 to 2023, based on the three-year compound annual growth rate. Growth is forecasted to be faster from 2023 to 2026, at 1.5%, when consumption of tofu and soy drinks is expected to reach 299,000 MT.<sup>5</sup> Tofu consumption is expected to lead the growth.



Vegetarian food served in a Buddhist temple in Vietnam  
Source: Pinterest

## TOFU AND DERIVATIVES

In 2023, Vietnam consumed 30,800 MT of tofu, up from 26,300 MT in 2020, a three-year compound annual growth rate of 5.4%. Tofu consumption is expected to continue increasing from 2023 to 2026 at a rate of 4.2% to 34,800 MT.<sup>6</sup>

Consumption of tofu in Vietnam prevails due to its significance in Vietnamese cuisine and the plethora of tofu types such as silken tofu, Japanese tofu and bean curd skin. Additionally, the rise of the sustainability movement has popularized tofu as a meat substitute due to its high calcium and protein content.<sup>7</sup> Per capita consumption is forecasted to grow 3.5% between 2023 and 2026.<sup>8</sup>

## SOY DRINKS

Soy drink consumption reached 255,500 MT in 2023, making up most of the tofu and soy drink consumption. Though soy drink consumption experienced a -0.5% decline between 2020 and 2023, things are expected to look up from 2023 to 2026. Consumption is forecasted to reach 264,500 MT in 2026, growing at a 1.2% three-year compound annual growth rate.<sup>9</sup>

Soy drinks are increasing in popularity due to health and sustainability reasons. Plant-based alternatives are seen as more environmentally friendly, as they contribute less to greenhouse gas emissions and use less water.<sup>10</sup> As such, per capita soy drink consumption is expected to increase at a rate of 0.5% between 2023 and 2026.<sup>11</sup>

## PLANT-BASED MEAT

Plant-based meat is not new to Vietnamese consumers, particularly among vegetarians. Vegetarian Buddhists have long incorporated mock meats into their diets. As such, religion is a major factor in plant-based protein consumption in Vietnam.<sup>12</sup> Concerns about animal-borne illnesses during the pandemic also drove the consumption of plant-based meat, as well as higher awareness of food safety, nutrition and environmental issues.<sup>13</sup>

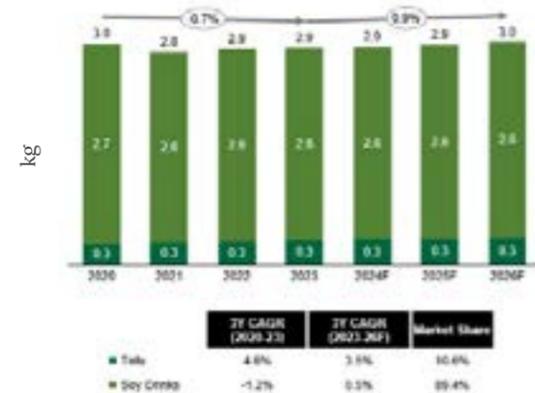
More product variety such as new brands and variety of plant-based meats, as well better availability in grocery stores also fueled market growth.<sup>14</sup> Consequently, according to Statista, the alternative protein market in Vietnam is expected to double from \$249 million to \$500 million in 2025,<sup>15</sup> signaling a significant growth in future demand.

Vietnamese Tofu and Soy Drink Consumption



Source: Euromonitor and Y&S Analysis

Annual Tofu and Soy Drink Consumption per Capita in Vietnam



Source: Euromonitor and Y&S Analysis

## SUSTAINABLE FOOD TRENDS

Sustainable practices are gaining traction in Vietnam. According to surveys, 31% of Vietnamese have reduced their meat consumption, 31% have purchased more seasonal produce, and 30% have chosen producers and brands with environmentally sustainable practices and values.<sup>16</sup>

The government also introduced the extended producer responsibility (EPR) regime on January 10, 2022, implemented under environmental protection laws. EPR mandates producers to be responsible for the full life cycle of their products, specifically waste management. EPR has two frameworks:

### 1. Packaging Recycling Obligations

Producers will have to independently recycle their product packaging and contribute to the Vietnam Environmental Protection (VEP) Fund. This applies to food producers who have an annual turnover of đ30 billion (\$1.18 million) or importers with import values more than đ20 billion (\$787,700).

### 2. Waste Treatment Obligations

Producers with packaging that is hard to recycle, like synthetic resin, must provide financial contributions to the VEP fund to support waste treatment activities.

There are also notable social initiatives in improving environmental sustainability. For instance, farmers in Vietnam are receiving grassroots help from Mekong Organics, an Australian-based organization. Mekong Organics helps to bridge the knowledge gap between producers, certifiers of sustainable and organic farming, and markets by enhancing farm management techniques and easing access to technology, which helps in improving sustainable farming.<sup>17</sup>





# Soy Foods and Beverages Production

Tofu and tempeh production in Vietnam has been growing since 2020, driven by the increasing demand for plant-based protein sources. According to Mordor Intelligence, the plant-based foods and beverages market in Vietnam is expected to grow at a compound annual growth rate of 9.28% by 2028, with soy milk being the most widely consumed plant-based beverage in the country.<sup>18</sup>

## SOY DRINKS

The soy drink production industry in Vietnam is largely made up of local companies that are manufacturing domestically. Quang Ngai Sugar is the leading soy drinks company in Vietnam, which makes up 58.4% of the soy drink market in Vietnam under the brand, Fami.<sup>19</sup> It successfully expanded to China and Japan in 2021, and in 2022, it also expanded to the U.S., Korea and Myanmar.<sup>20</sup>

Vietnam Dairy Products, or Vinamilk, is the second largest soy drink producer in Vietnam, with brands such as Vinamilk and GoldSoy with 8.9% and 7.2% of market shares respectively.<sup>21</sup> Vinamilk was established in 1976 in Vietnam and has expanded to the Philippines, Myanmar, Thailand and China. Vinamilk produces a range of soy milk flavors, from fresh soy to red bean and walnut, which are made from 100% non-GM soybeans. Vinamilk markets their soy drinks as a healthy option, as they contain less sugar and include vitamins.<sup>22</sup>

Another notable brand in Vietnam is Vinasoy, which has expanded its line of soy drinks to plant-based yogurt: VEYO yogurt. VEYO yogurt the first plant-based yogurt in Vietnam and is made up of fermented macadamia, walnut, almond, pistachio and soy. It uses non-GM ingredients and comes in yuzu, strawberry and peach flavors.<sup>23</sup>



FAMI soymilk sold on Taobao, China's top e-commerce site. Source: Taobao

## TOFU AND DERIVATIVES

In Vietnam, the tofu production industry is highly fragmented. There are both industrial manufacturers and small and medium enterprises. Industrial manufacturers usually make silken and egg tofu for supermarkets, while small and medium enterprises tend to make traditional forms of tofu sold in traditional markets. An example of traditional tofu is Mo tofu, a popular tofu made in Mo village in Hanoi. Most Mo tofu producers are multigenerational family-owned businesses.<sup>24</sup>



VEYO yogurt flavours in carton packaging. Source: Vinasoy

Despite having a few industrial manufacturers in the country, no producer controls more than 5% of the market share. Vi Nguyen holds the largest market share with 3.2% and Dong A Chau Food with 0.8% share.<sup>25</sup>



Tofu being sold at a market in Vietnam. Source: dreamstime

## PLANT-BASED MEAT

The plant-based meat market, though not yet prominent, is growing at a fast pace due to rising nutritional concerns and health issues. The alternative protein market value in Vietnam is expected to grow at a 10-year compound annual growth rate of 25.4% between 2019 and 2029, to \$225.68 million. Soy-based products currently dominate the Vietnamese plant-based protein market, followed by wheat, peas and other sources.<sup>26</sup>

There are several notable plant-based meat producers in Vietnam. OmniFoods, launched by Green Monday, is known for its Asian-friendly plant-based meat alternatives, such as minced pork, luncheon meat and meat strips. These products are made with soy, peas and shiitake mushrooms, and they are sold at supermarkets and online platforms. Apart from that, Yukino Foods is a Japanese company that has been operating in Vietnam since 2016. It offers a range of plant-based products, including frozen gyozas and falafel, as well as hot food items like plant-based meat burgers and Japanese curry.



Plant-based Laab Kua with rice. Source: Meat Zero (by Charoen Pokphand Group)

# Soy Supply Chain

## IMPORTS AND LOCAL PRODUCTION

Despite being an agricultural country, Vietnam has become dependent on soybean imports. Vietnam imports 93% of its soybean demand.<sup>27</sup> The high import share is expected to continue, with falling domestic production. Domestic production has steeply dropped -8.1% from 2020/21 to 45,000 MT in 2023/24 estimates. While local production is forecasted to increase 1.1% to 46,500 MT in 2026/27, the production volume will still be much lower than in 2020/21.<sup>28</sup> This decrease is due to smaller land area dedicated to soybean cultivation as farmers switch to more profitable crops such as fruits and vegetables.<sup>29</sup>

In 2023, Vietnam imported 2.041 million MT of soybeans, of which 32.5% came from the United States. Soybean imports into Vietnam have dropped 4.5% between 2020 and 2023. Imports from the U.S. experienced a similar trend, with U.S. soybean volume falling 21.3% between 2020 and 2023 in favor of Canadian and Brazilian imports.<sup>30</sup> However, soybean imports are expected to grow 1.1% to 2.111 million MT in 2026 due to the reopening of food services, wet markets and industrial and processing zones post-COVID-19.<sup>31</sup>

Soybean planting season in Vietnam is in January and February, with harvest happening from April to June. There are several soybean cultivation areas in Vietnam, with 49% being produced in the Red River Delta, 27% in the Northern Midlands and 16% in the Central Highlands. The average soybean yield is 1.6 ton per hectare (30 bushels per acre).<sup>32</sup>



Hai Phong Port  
Source: Hai Phong Port

## SUPPLY CHAIN AND LOGISTICS

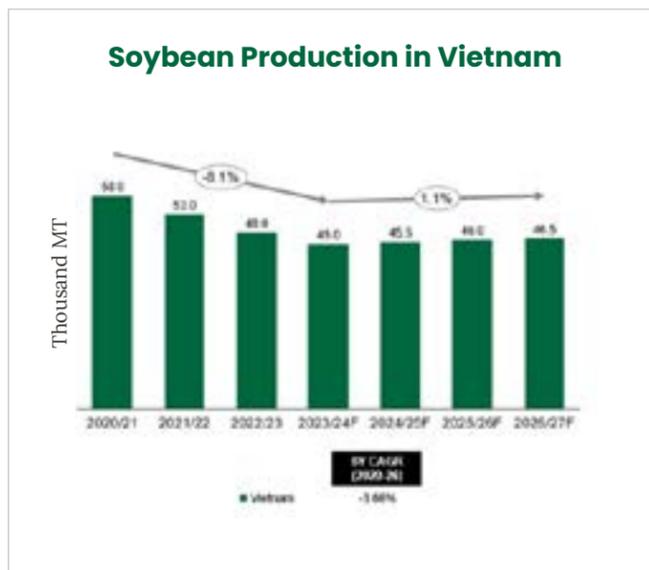
Soybean imports usually arrive in Vietnam by sea via containers. Some soybeans arrive by land from China or Cambodia, though these only account for 1% to 2% of soybean imports.<sup>33</sup> The major ports used to receive soybean imports are Vung Tau, Quang Ninh, Ho Chi Minh and Hai Phong Port. The distribution of imported food-grade soybeans in Vietnam varies based on demand, with the largest going to Ho Chi Minh, where the population is largest.

Vietnam uses two types of U.S. soybeans for food processing: Grade 1 – good quality that usually does not require cleaning – and Grade 2, which is slightly lower in quality and may require cleaning. Grade 2 soybeans are more commonly used in Vietnam for food processing, unlike in

Indonesia. Once the soybeans have arrived at Vietnam's ports, one to two days are needed for customs clearance, quarantine and food safety inspections. After that, it will take another one to two days for the soybeans to reach their end users in Vietnam.

Traders or importers are important in Vietnam's soybean supply chain. Traders may screen, clean and bag soybean into 50-kg (110-pound) bags for distribution upon request. Traders may sell directly to manufacturers or to distributors. However, some manufacturers import soybeans directly without the need for traders.

In terms of shipment of GM vs. non-GM soybeans, GM soybeans are usually shipped in bulk in containers while non-GM soybeans are packed in 25-kg (55-pound) bags in the United States.<sup>34</sup>



Source: Euromonitor and Y&S Analysis



Source: GTA & OECD



Source: USSEC Vietnam Representative, Y&S



# Policy and Regulation

## IMPORTS, CUSTOMS AND TARIFFS

Vietnam does not impose tariffs on soybean imports.<sup>35</sup> In terms of import requirements, Vietnam customs procedure typically includes presenting a Certificate of Free Sale, a Certificate of Analysis and a Phytosanitary Certificate. This process does not differ between GM and non-GM soybeans.<sup>36</sup>

## NUTRITIONAL LABELING

According to Vietnam’s Ministry of Health, food produced, traded, imported and circulated in the country must present the following nutrition facts found in the table on labels.<sup>37</sup>

All labeling has to be in Vietnamese and must include all ingredients, manufacturing date, best before date, product batch number, origin country and storage instructions.

## ALLERGENS

The following foods and ingredients are known to cause hypersensitivity and shall always be declared:<sup>38</sup>

- Cereals containing gluten; i.e., wheat, rye, barley, oats, spelt or their hybridized strains and products of these.
- Crustacea and products of these.
- Eggs and egg products.
- Fish and fish products.
- Peanuts, soybeans and products of these.
- Milk and milk products, lactose included.
- Tree nuts and nut products.
- Sulphite in concentrations of 10 mg/kg or more.

### Nutritional Labeling Requirements

NUTRITIONAL INGREDIENT	MEASURING UNIT
Energy	Kcal
Protein	g
Carbohydrate	g
Total sugar	g
Fat, including saturated fat	g
Saturated Fat	g
Sodium	mg

Source: Vietnam Ministry of Health



Vi Nguyen's tofu, with nutritional labeling on the front  
Source: namanmarket

## GENETICALLY MODIFIED FOOD

Food products that contain more than 5% of GM ingredients are required to declare on their labels. The phrase “*biến đổi gen*,” or genetically engineered food, has to be displayed on the ingredient list next to the GM ingredient.



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