



# MARKET OVERVIEW – SOYBEANS

Commodity Trading

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## **INTRODUCTION**

Soybean is an old agricultural commodity. It appeared between 1700 and 1100 BC in South-eastern China. During the 16th century, soybeans were used mostly in Indian countries, then emerged in Georgia (US) in 1765 and arrived in England in 1790. A well-known American scientist has discovered that this bean was full of oil and protein, taking the opportunity to make a famous new product, the margarine. Then, farmers began to use it to feed the livestock. Nowadays, many products can be made with soybeans. It can be used as a food ingredient to be processed into many kinds of products like soya sauce, soya milk, tofu. Moreover, it is used as animal feed, biodiesel, solvent to erase oil, and even candles. These became very popular in the Western World these last years.

Soybeans were produced mostly in Asia during the 20th century, then the US started to produce it too, providing more than half of the global needs. Then the bean was grown in Latin America, and Brazil production exceeded the production of China, making this former the largest producer followed by the United States and Argentina.

## **MARKET STRUCTURE**

In terms of trade, the big four of soybeans are ADM, Bunge, Cargill and LDC. They are the leaders of commodity trading and have extensive production, storage, and transport facilities.

The six largest traders account for around 60% of the global soybean trade. Monsanto (now called Bayer after acquisition) and DuPont are heavily involved in seed production. They try to develop more advanced seeds which will reduce the chances of infestation and increase the yield they can achieve per acre. US and Brazil exports of soybean account for around \$46bln. We can conclude that this is an oligopoly.

## **KEY DRIVERS**

The weather has a major effect on the production of soybeans, and subsequently, on total agricultural production. Even if not continuous or severe, the wrong kind of conditions at the wrong time in the planting cycle can also adversely affect soybean yield potential. Moreover, it could also have an influence on the freight of crop transport to the market.

This legume is traded in US dollars, like other globally traded goods. A drop in the value of the US dollar compared to the currency of a commodity consumer at the simplest means that the purchaser may need to pay less from his own money to purchase a specified quantity of the commodities. As the market price of soybeans becomes less costly, the demand increases, leading to a price rise and inversely.

Emphasizing the significance of this commodity as one of the product governments' most valuable suppliers, this can be seen as a core element of trade strategy among several nations. A few years ago, China decided that it will raise tariffs on the imports of this commodity coming from the US. The result of this would lift the price in China but decrease the price in the US.

If there is a rise in the price of electricity, it will result in an increase in processing costs and thus, the selling price will increase. For certain fields, electricity takes up a large part of the operational costs. This is particularly the case when indirect energy consumption of fertilizers is considered, as fertilizer production is highly energy intensive, requiring a vast quantity of natural gas.

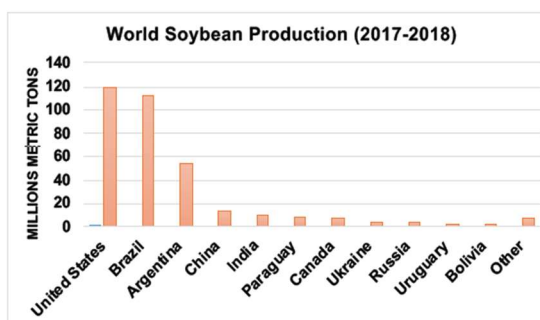
Inventories serve as a hedge for soybean farmers as well as for buyers. When demand grows more than supply, there is a shortage, and we can expect the price of the soybean to rise. Nevertheless, declining stock levels could make this commodity market very sensitive to an unexpected supply interruption or it could temporarily have a rise in demand. Moreover, goods have substitutes, and soybean can be replaced by corn. For an agriculturist, if the price of corn is increasing, he will buy more soybeans and inversely. Corn is not the only substitute, wheat, barley, and peas can also be used to replace soybeans.

### LARGEST PRODUCING NATIONS

Soybeans are the world's largest source of animal protein feed and the second largest source of vegetable oil.

The largest soybeans producers in the world are the United States, Brazil, and Argentina. They account for around 80% of the world's production. Other notable nations are China and India. The average global soybean production per year is around 350 million metric tons. Soybeans represent around 90% of the United States oilseed production.

(Million Metric Tons)	
United States	119.52
Brazil	112.00
Argentina	54.00
China	14.20
India	9.50
Paraguay	9.20
Canada	8.00
Ukraine	3.89
Russia	3.50
Uruguay	2.52
Bolivia	2.60
Other	21.8
World	346.92

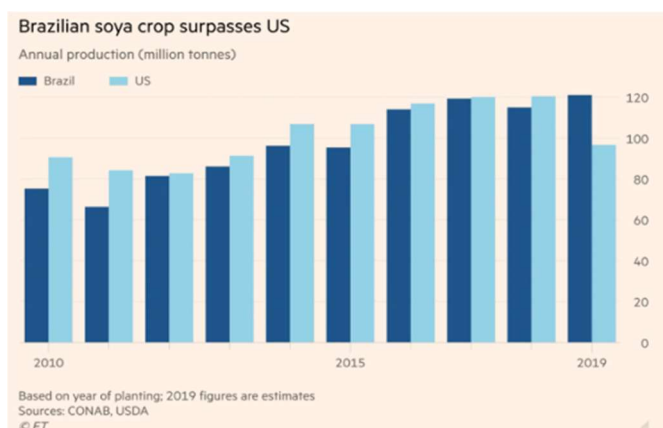


Source: USDA

As shown above, we can easily see that the United States and Brazil are the leaders by far.

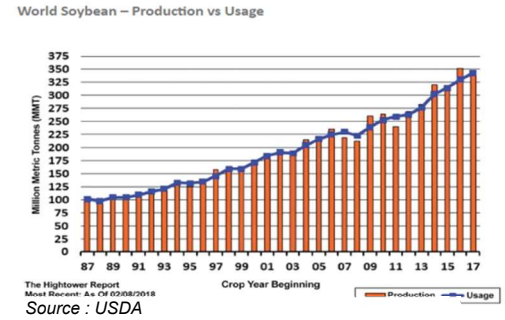
For the first time ever, it appears that Brazil will have a bigger crop than the US. Brazil's crop is around 120M tons of soybeans against 96M tons for the US.

One of the reasons is that soybean exportation has been affected by the US trade-war with China, the first importer of soybeans.



As Tereza Cristina da Costa, Brazil’s agriculture minister said, “This unresolved agreement brought a very good momentary opportunity for Brazil”.

We can observe that, the world growth production of soybeans has been consequent. Growth has increased by about 350% since 1987. Livestock and poultry commercial growth is probably correlated with the soybean growth.



In terms of money, US soybean exports accounted for \$21,6bn dollars in 2016. China, the biggest importer, accounted for \$39.6bn dollars.

**US and Brazil dominate soybean exports**

Brazil was the world’s top exporter of soybeans in 2017, with about half the market, followed closely by the U.S. – which had been number one in 2016.



Chart: The Conversation, CC-BY-ND - Source: UN Trade Data - Get the data

**China loves soybeans**

China is the biggest importer of the world’s soybeans, by far, which means a halt to purchases of American exports will be very painful for U.S. farmers.



Chart: The Conversation, CC-BY-ND - Source: UN Trade Data - Get the data

**KEY CORPORATE PLAYERS**

In 2016, the largest 6 exporters traded almost 60% of soybeans. The same year these 6 largest traders - Bunge, Cargill, ADM, COFCO, Louis Dreyfus and Amaggi accounted for 57% of all soy exports from Brazil.

Bunge, the largest soy trader, exported 11,005,247 tons in 2016 in Brazil. They have been present for over a century and own Ceval, the largest soy processor.

Operating since 1965, Cargill, the second largest soy trader, exported 8,910,912 tons in 2016.

It is worth mentioning that COFCO is the most prominent of the new entrants into the Brazilian market. As China’s largest food and agriculture company, they entered the Brazilian soy export market in 2014 by acquiring 2 fast-growing exporters. In 2016, they already exported 4,582,884 tons.

The number and dominance of soy traders in Brazil between 2005 and 2017



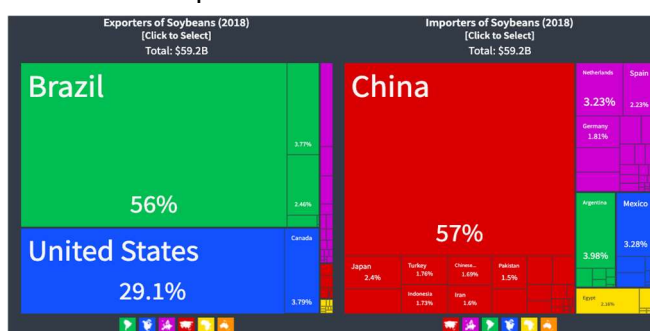
Source : Trase Yearbook 2018 1

## TRADE FLOWS

As previously said, the main exporters of soybeans are Brazil, the United States and Argentina. On the other hand, China is the largest importer of the commodity, followed by the European Union. Generally speaking, the demand for soybeans is correlated with the production of meat and poultry. As an example, China primarily imports large volumes of soybeans in order to feed livestock (pigs), as their national territory is not sufficient to meet the local demand. The demand could be significantly increased, as China recently announced that they aim at relying almost entirely on pork produced domestically, which would ultimately result in even more inflows of soybeans entering the Chinese territory.

Prior to the Trade War, a significant share (32.58 million tons of a total of 95.53 million tons) of 2017 China's imports of soybeans came from the United States. However, since the trade relations deteriorated following the announcement and implementation of a 25% custom tariff on US soybeans, China mainly turned towards Brazil to offset the decline in U.S. soybean imports.

More recently, in December 2019, the U.S. announced it had reached the Phase 1 Agreement with China, which implied a reduction in barriers to trade, not only related to soybeans but to agricultural products more broadly speaking. This agreement obliges China to purchase \$80 billion worth of U.S. agricultural products over the next two year. Even though it is not directly targeted towards soybeans, farmers are hopeful that this agreement will help the exports reach a level that is comparable to the pre-War situation.



## Storage

Once the beans are ripe, they need to be harvested. The most appropriate conditions are when the beans have about 13 percent moisture content, which prevents both shatter losses (when the beans explode) and mold development. Once they are harvested, they are stored either in on-farm warehouses or directly sent to private warehouses within the country. Once they have reached the warehouse, they are either stored in bulk tote bags or in silos. The weather can significantly alter the state of the beans, so it is important to keep fans over the bulks (drying). In winter, this process will prevent condensation and snow to grow mold, and in summer it will prevent overwarming. It is important to verify once every one or two weeks the state of the beans as the meteorological conditions play a huge role.

The appropriate temperature under which soybeans must be stored between 1 and 4°C in Winter, and between 4 and 15°C in Summer. Soybeans are carried in bulk cargoes, which are generally transported in large volumes. Once the cargo arrives at the port, it is transferred to the vessel by conveyor belt and loaded by pipe.

### Transportation

Transportation includes both domestic and foreign demand. When it comes to U.S. soybeans, they are mainly produced in the Midwest. For that matter, they are transported either by truck or rail in order to reach local farmers or producers of soy-based products. For exports, soybeans are carried to the port by rail to reach the Pacific Northwest, or to Mississippi Gulf by barge through the Mississippi river.

For Mexican soybeans, a great majority of the production is concentrated in the Sorriso area. The beans are transported either by truck or rail (although roads are not particularly well-developed). For exports, they are carried through the Santos corridor, which is a well-developed railroad that runs all the way down to Santos, which is the main trading port for soybean exports.

Whenever possible, large volumes of soybeans can also be carried through inland waterways, but this implies that the beans are produced and carried from a region that is close to a river. Mexico having a large surface, intermodality is often necessary for the beans to reach the ports. In a nutshell, carriage rates as well as geographical locations of the are key factors for the selection of the transport mode within the country.

Once they reach the port of lading, they are ready to be shipped to the importing country using ventilated containers.

One thing to remember is that it is important to monitor the state of the beans from the moment they are harvested to the moment they reach the destination port in order to keep track of the moment of potential degradation. In fact, meteorological factors can alter the state of the beans, which can be seen by its color or aspect.

Figure 3: 2013 Soybean production by county, bio-diesel plants, export port regions, and HPAU\* by State

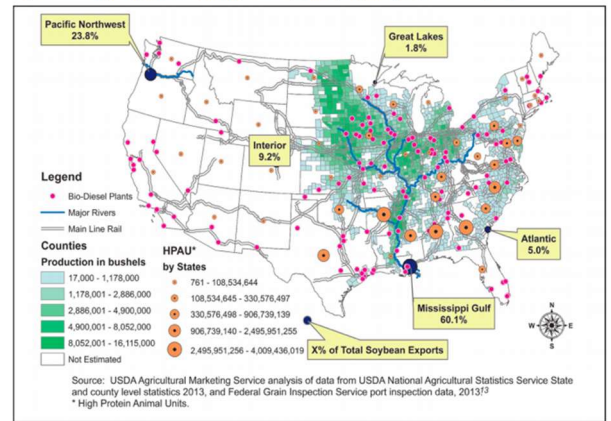


Figure 2.5: Sorriso-Santos soybean export corridor



Source: APROSOJA (2011). Modified by author.

## SPECIFICATIONS

Soybeans are traded in three main different forms, which are soybeans in its simplest form, but also soybean meal (used for feeding livestock) and soybean oil, which is used mainly for biodiesel and cleaning products.

From the moment that soybeans are harvested, they can be processed to be ground in a meal form, or oil.

Soybeans are known to be extremely rich in protein. In fact, they contain as much as 36 grams of proteins for 100 grams of raw soybeans (USDA). This is the reason why this commodity is widely used to feed animals. Moreover, many products are derived from soy. It includes for example tofu, tempeh, soy sauce or soymilk. In a nutshell, soy is an excellent alternative for those who seek to consume sufficient amounts of protein, but without consuming any animal products.

## SOYBEAN PRICES

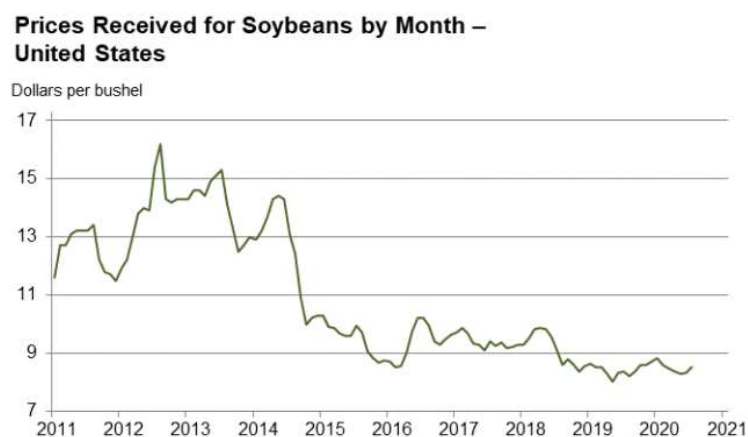
The general price level of soybean (and other agricultural commodities) is influenced by a variety of market forces that can change the balance between supply and demand. It includes consumer preferences, factors affecting the production processes (weather, input costs, pests), soybean substitutes, government policies, storage, transportation, foreign exchange or tariffs. Worth to mention that the USDA has a substantial influence over the price as they are the one monitoring agricultural market information.

Because of the characteristics of agricultural product markets, prices tend to be more volatile than nonfarm goods and services. Noteworthy characteristics are the seasonality of production, the derived nature of their demand and generally price-inelastic demand and supply functions.

One feature of the US and international commodity markets is the importance of futures markets. Soybean does not deal with immediate transfer of goods. It is based on buying (or selling) commodity contracts at a fixed price for potential physical delivery at some future date.

As of 1<sup>st</sup> October 2020, the price of Soybean per liter is 0.29USD

Below is the historic prices chart from 2011 to 2020





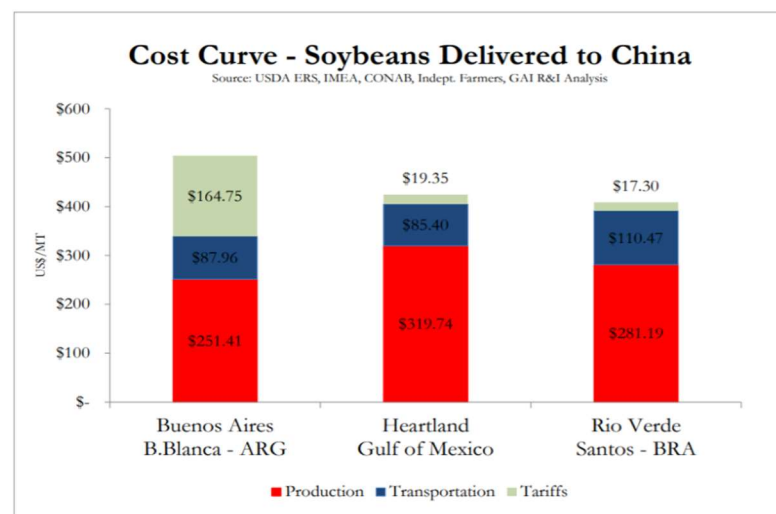
## SOYBEAN COST CURVE

The graph below includes the export costs between production regions from 2011/12 for the US, Brazil and Argentina. By analyzing this cost curve, we can define who has an advantage in export. The total export costs include Production costs, Transportation costs and Tariffs.

Soybean production is the lowest in Argentina, but the government set tariffs to support domestic soybean crushers.

The US has a cost advantage over transportation, but it is more likely to decrease as Brazil and Argentina start to invest in their transportation infrastructures.

China is able to exert market power over its suppliers. Due to its monopoly position, China is able to maximize its import profits.



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