



The soya bean situation: From 2021 and beyond

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The soya bean crop is critical for sustaining the current human population, but it is also a crop that brings with it huge sustainability concerns. This article takes an in-depth look at soya bean production for livestock feed in several countries.

Already, large areas of native habitat in South America have been destroyed for activities such as pulp and beef production, as well as soya bean cultivation, mostly for animal feed. Among plant protein ingredients, soya beans have the highest crude protein content – about 40% – depending on their location. They also have a balanced amino acid profile and good digestibility.

It is therefore not surprising that in 2021 (as explained previously in the journal *Nature Sustainability*), soya beans were the largest global source of protein

for livestock feed. The authors noted that global production of soya beans has more than doubled since 2000, mostly from new hectares (about 70% of production) but also from yield gains due to advances in soya bean genetics and cropping practices. Soya beans are grown in about 100 countries.

China's hunger for soya

China's soya bean imports from Brazil have surged since the 2000s, most of which are used for animal feed to support increasing meat consumption. At the same time, trade tensions between China and the United States (US) are expected to result in even more soya bean imports into China from South America in future.

"China is the biggest source of soya bean demand," explained Stefan Vogel, global sector strategist of grains and oilseeds at Rabobank RaboResearch Food

and Agribusiness. "Whole soya beans are imported by China for animal feed, mostly from Brazil and the US, and some from Argentina and are processed into meal there. The hot market is swine feed, although the use of soya in chicken feed production has recently increased as well."

Continuous growth for Brazil

Brazil also exports sizeable amounts of whole soya beans to Europe and additional volumes to Asia, the Middle East and other parts of the world, said Vogel. Soya bean meal produced in Brazil is exported to many countries, with Europe being the largest destination, followed by countries in eastern and southern Asia.

"We expect the soya bean hectareage in Brazil to continue to increase," he added. "In the past five years, it has grown by 2 to 3% a year. Demand is strong and producers are making good margins, given

high global prices and a relatively weak Brazilian currency."

Soya meal in high demand for feed

Apart from China and the European Union (EU), Asim Anand, senior editor at *SP Global*, said Thailand, Turkey and Russia are major importers of South American soya beans, along with Vietnam, Indonesia and Algeria. However, he added that soya bean meal for feed is in huge demand within both Brazil and Argentina amid their soaring meat production for export, making it tough for soya bean exporters to procure the volumes they'd like to ship.

European soya cannot meet demand

Vogel noted that in the EU there is a relatively stable livestock population and, while soya bean production has increased over the last decade, meal made for stock feed from EU soya beans currently only amounts to about 7% of what is needed.

"We need 28 to 29 million tons in the EU, not including the United Kingdom, and only about two million tons of this is from domestic soya beans. The rest is imported, with over half of the EU's needs coming from Brazil and Argentina as soya bean meal. The remaining 35% stems from imported soya beans processed in the EU. The EU will need to continue to import soya bean meal for livestock feed for the foreseeable future if we want to maintain current levels of meat consumption."

Global meat consumption

Globally, the question of whether we have reached 'peak' meat consumption is difficult to answer. Consumption levels in China are similar to those in Europe, where consumption is decreasing. European soya beans should not be underestimated when it comes to meeting livestock feed needs.

"We will continue to use a mixture of both imports and domestic soya beans with a goal of more sustainable global soya bean production everywhere," Vogel said. To help European agriculture become more sustainable, the European Feed Manufacturers' Federation (FEFAC) released its most-recent soya sourcing guideline document in February 2021.

Changing dynamics

The US Department of Agriculture's (USDA) Economic Research Service researchers, which includes senior economist, Fred Gale, explained: "Chinese demand will drive

continued growth in soya bean trade over the next ten years, as world soya bean imports climb by 46,9 to 222,7 million tons". Brazil is expected to be the leading country for soya bean exports through 2030.

In addition, the dynamics of world production have changed a great deal in recent decades. In a new book, *Crop Physiology Case Histories for Major Crops*, the authors note that in the early 1990s, the US accounted for half of global soya bean production, while Brazil and Argentina produced about a quarter. "The share of global soya bean production among these three countries has changed drastically over the past three decades," they state, "with Brazil and Argentina together now accounting for half of global production and the US producing a third."

There are a few main factors that may affect world soya bean production for animal feed, chief among them being the success of plant-based food products and world population. The United Nations projects world population to be 9,7 billion by 2050.

Consumers of soya

Currently, there are about 100 countries where soya beans are grown and probably all of them use soya bean meal in livestock diets.

According to an analysis published by the University of Oxford's Food Climate Research Network (using USDA data up to 2018), soya consumption is broken down so that:

- 37% is fed to poultry (the largest consumer of global production).
- 20% is fed to swine.
- 6% goes to aquaculture.
- 2% is fed to cattle.
- The rest is used in human food products and dog food.

Soya bean meal will remain a crucial feed ingredient for many livestock species, but environmental, societal and trade pressures are reducing its use in some areas of the world. More environmentally friendly alternatives to soya beans produced in South America, such as insect meal, lupins, algae and many others, are actively being examined in some countries.



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However, China's government directed the country's swine production sector earlier in 2021 to use alternatives to soya bean meal where possible, to reduce its reliance on imported soya beans, no matter the country of origin. This comes after China imported a record amount of soya beans in 2020.

In addition, in the EU, the need for soya beans in swine and poultry rations may decrease quite significantly in future in that region, now that the ban has been lifted on using some animal by-products in feed.

Rise of synthetic amino acids

Lastly, because synthetic amino acids can now be produced economically in large volumes, they represent another way that the use of soya bean meal in livestock feeds can be reduced. According to the United Nations' Food and Agriculture Organization's 2002 report, *Protein Sources for the Animal Feed Industry*, "it is suggested that ... if 550 000 tons of L-lysine hydrochloride is used globally, it could replace 18 million tons of soya bean meal, representing about half of US soya bean meal production." 🌱

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