Europe’s specialty foods like hams and cheeses are exported into other parts of the world. But few of us are aware that the EU is also the world’s biggest importer of agri-food products. Our livestock farmers are particularly dependent on imported feeds, and especially on imported protein sources.

Most Europeans are also not aware that their continent is lagging behind on the world’s fastest-adopted agricultural technology – genetically modified crops. But few of us are aware that the EU imports its entire population’s body weight in soya each year – mostly genetically modified.

This ‘protein gap’ is once again on the political agenda. Our livestock farmers would not be able to produce the hams and cheeses without a sufficient supply of protein-rich feed for their farm animals. “Banning GM imports means doing away with our capability of producing food”, said EU Commissioner Vytenis Andriukaitis.

With this brochure, we would like to inform the debate, with the objective of supporting a rational, coherent and realistic protein strategy.
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Livestock is a major sector

The EU’s livestock sector contributes approximately 40% to total EU agricultural production. Roughly five million EU farmers raise animals for food production with a value of about EUR 160 billion. Every year, they need approximately 480 million tons of feed for their animals. The EU is the second-largest importer of feed raw materials in the world, after China, and well ahead of the US and Brazil.

2 World Grain https://world-grain.com/
The EU depends on protein imports

The EU is highly dependent on the import of protein-rich animal feed (around 70%), especially soya beans and soya meal. In the context of an increasing global population and rising per capita meat consumption, there is a growing demand for protein sources. This raises questions concerning future sources of feed protein in respect of their availability and suitability. In this context the shortage of protein rich feed materials produced in the EU is considered by many as a major food security issue. Therefore, encouraging the production of protein and the cultivation of leguminous plants in the EU has been one of the recurrent objectives of the Common Agricultural Policy (CAP). Currently the CAP offers voluntary coupled payments and benefits in the greening scheme to boost protein crops in Europe. The new CAP is expected to define an ambitious strategy to promote protein crops whilst reducing dependence on external sources. Nevertheless, EU production is far from being self sufficient and will continue to depend largely on imports.

Feed is the main factor for competitiveness

Livestock farmers depend on the availability of quality feed at good prices. The majority of livestock farming costs are related to feed, because of the large required volumes. While some farmers — especially in the dairy sector — produce their own feed on-farm, most other European farmers rely heavily on purchasing feedstuffs (either as feed materials or compound feed). According to the EC agricultural outlook³, “EU meat and dairy production is set to expand further. For poultry, and to a lesser extent pigmeat, livestock numbers will rise, while dairy production will mainly increase its productivity”.

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EU feed use per animal type in 2015/2016

In the EU the top feed destination is pig production, reaching 9 million tonnes annually. Feed rations for cattle are mainly composed by the 3 main cereals as well as soya meals. Broilers are largely fed with soya meals, in contrast with dairy cattle.

Source: EC agricultural outlook 2017-2030
What livestock farmers say

In a recent survey of Italian livestock producers, they identified the main challenges concerning feed and competitiveness. Feed represents over 73% of total costs of production. Indeed, almost one farmer out of three recognized feed cost as the main factor of competitive disadvantage and almost half of the interviewees pointed out a greater openness towards feed from genetically modified crops as a possible booster of competitiveness improvement. Thanks to innovation in plant breeding farmers can grow high protein crop varieties.

4 ICON 2014 The Economic Impact of GM imports on Italian Agribusiness under Different Regulatory Scenarios.
The EU is the biggest agri-food trader

The EU is the world’s biggest exporter and importer of agri-food products. At EUR 253 billion\(^5\), the EU’s agri-trade volume is bigger than the economies of Finland or Portugal, and four times bigger than the EU’s spending on the Common Agricultural Policy\(^6\). The EU’s imports are dominated by commodities and other primary products\(^7\). These are used and transformed by the EU’s whole agri-food chain, which is the EU’s largest employment sector\(^8\). Many of the higher value intermediate and finished products are then exported.

\(^5\) For the 12-months period September 2016 to August 2017 (EUR 136.3 bn of exports + 117.3 bn of imports).
\(^8\) GDP 2016: Finland: 236.8 bn; Portugal EUR 204.6 bn CAP spending: ca. EUR 58 bn or 0.4% of the EU’s GDP.
Biotech crops feed EU livestock

The European feed industry relies on feed materials arriving in Europe from third countries. The biggest exporters of agri-food products to the EU are North and South American countries, where genetically modified (GM) crops are widely grown and have contributed to higher productivity. The EU imports large amounts of soybeans, mainly to feed its farm animals. Today, GM crops are the standard for soybeans. The EU also imports significant quantities of GM maize and rapeseed to meet its needs.

The import dependency is extremely high for soya: The EU imports 95% of its soya beans and soya meal, or 36.1 million tonnes of soybean equivalent per year (average 2013-15). Over 95% of these imports come from five countries in the Americas, where GM technology adoption is between 94% and 100%. The biggest soya exporters to the EU are Brazil, the USA and Argentina; the very same three countries which are also the leading food providers to the EU, and the leading GM adopters in general. These are followed by Paraguay, Uruguay and Canada.

Global Status of GM crops

<table>
<thead>
<tr>
<th>Crop</th>
<th>Hectares</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soybean</td>
<td>117</td>
<td>78</td>
</tr>
<tr>
<td>Cotton</td>
<td>35</td>
<td>64</td>
</tr>
<tr>
<td>Maize</td>
<td>185</td>
<td>33</td>
</tr>
<tr>
<td>Canola</td>
<td>36</td>
<td>24</td>
</tr>
</tbody>
</table>

Soy, maize, cotton and rapeseed make up most of the global GM production and have high adoption rates, especially in the Americas. For example, 78% of the world’s soya bean elds were cultivated with GM soya beans in 2016. The global area cultivated with GM crops increased to 185.1 million hectares in 2016. This is close to 13% of the world’s elds, or about seven times the land mass of the UK. 26 countries, 19 developing and 7 industrial countries, planted GM crops in 2016.
A new dependency? A new trend?

The level of dependency in proteins has been in the range of 60-70% for protein rich materials for the last 40 years. The fact that most of these protein rich ingredients is now GM has not made the situation better or worse.

The EU imports over 30 million tonnes of GM

A substantial part of the EU’s agricultural commodity imports is based on GM crops. According to the EU Commission’s estimates\textsuperscript{12}, between 2014 and 2016, the EU imported more than 30 million tons of GM soybean equivalent on a yearly basis. This is around 90% of total soybean equivalent imported into the EU. In addition, the EU imported somewhere between one and four million tons of GM maize and oilseed rape\textsuperscript{13}. A total of 64 events were EU-approved for import and processing and/or for food and feed as of January 2018\textsuperscript{14}.

\textsuperscript{12} Official trade data do not differentiate between conventional and GM commodities. Therefore, the share of GMOs in a specific commodity can only be estimated, mainly based on the share of the GM planted area of the relevant crop in the exporting countries.

\textsuperscript{13} Between 0.5 and 3 million tonnes of GM maize (i.e. around 5 to 25% of maize imports), between 0.15 and 0.60 million tonnes of GM corn gluten feed (i.e. 70 to 85% of corn gluten feed imports), and less than 0.5 million tonnes of GM rapeseed equivalent (around 5 to 10% of total rapeseed equivalent imports).

A realistic approach to find the right alternatives

Even if the EU were to double its production of soya in the next 10 years (a scenario that is seen as highly improbable by the European Commission’s agricultural outlook)\(^{15}\) the EU will undoubtedly remain reliant on imports of soya from abroad.

Trade facilitates sustainable protein supply

Any initiative to support protein supply in Europe should not come at the expense of damaging existing trade relations. In order to meet a growing global demand for animal proteins within a limited availability of resources trade exchanges cannot be undermined and must contribute to the competitiveness of the EU livestock sector.

Despite its import dependency and the spotless global safety record of GM crops over more than 20 years, the EU’s approach to biotechnology has resulted in trade disruptions and higher prices for key agricultural commodities. The EU’s resistance to biotech has been dwarfed by the massive buying power of China, which currently imports about 63% of the world’s traded soya beans, and this share is expected to increase to 67% by 2030, according to the OECD-FAO\(^{16}\). China has launched a support programme for the production of domestic soya beans, but this will most probably not alter its soya bean import dependency (currently around 88%). The EU imports around 9% of the soya beans traded globally, but also imports a large share of meals (31% of protein meals traded, mainly soymeal).

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The EU is 70% dependent on imports of protein-rich crops. This phenomenon is usually referred to as the EU’s ‘protein gap’. The dependency is much higher when the focus is on soya beans alone, where EU production covers only 5% of EU demand. Even at an expected higher production level of 2.5 million tonnes in 2017, these figures show a high rate of dependency on imports of over 90%, leaving European agriculture vulnerable to external conditions. Together with protein crops, soya bean benefitted from both the voluntary coupled support scheme in numerous Member States and greening measures (implemented as nitrogen fixing crops in Ecological Focus Areas).
EU soy declaration

On 17th July 2017, fourteen EU Member States signed the European Soya Declaration. What the declaration rightly points out is the importance of imported soya beans and meal for the European livestock sector, and the environmental benefits of legumes including soya. It does so by talking about developing markets for ‘sustainably cultivated non GMO soybeans’. But what it neglects to mention, is that there are equally important environmental and economic benefits of growing and importing genetically modified crops. In fact, by the same reasoning contained in the declaration, such crops could rightly be called ‘sustainably cultivated GM soybeans’.

Sustainable soy trade

The European industry relies on the supply of responsible soy. FEFAC, the European feed industry association, has developed the soy sourcing guidelines to contribute to a transition towards sustainable soy trade. These guidelines are a comprehensive set of requirements reflecting the key criteria for any scheme that claims to supply responsible soy: legal compliance, responsible working conditions, environmental responsibility, good agricultural practices, land rights, etc.

On January 19th 2017 Aprosoja, IDH, ABIOVE, FEDIOL and FEFAC (Brazilian soy producers and processors and the European feed and vegetable oil industry) signed a Memorandum of Understanding in support of Brazilian responsible soy production and its market acceptance in Europe. This new scheme between Brazilian soy producers and key European soy purchasers, illustrates a common vision and action plan fostering responsible soy production in Brazil and use in Europe. This cooperation agreement aims at fostering more sustainable soy production and trade.
The need for GM and non-GM segregation, coupled with the need to pay significantly higher prices for non-GM supplies if South American farmers are to be encouraged to grow more non-GM soybeans, make it highly unlikely that the whole soya supply chain (including farmers) will switch back to non-GM varieties.

**Which alternatives to fill the gap?**

The EU production of soybean, rape and sunflower seeds, as well as pulses and other legume crops is growing from a very low level. But it cannot, for the foreseeable future, fully compensate for the EU’s dependence on soybean and soymeal imports. Nutritional and farming reasons dictate that not all soy in feed can be replaced by alternative protein sources. The inclusion of soymeal in feed rations contains essential nutrients such as lysine and other essential proteins. Also, the protein content of soybeans grown in the EU is on average around 25% lower than in imported soybeans\(^\text{25}\).

Import prices for soya beans and soymeals are projected below the recent high levels and this will stimulate imports further. The projected growth in biodiesel demand in the US and in other regions across the globe will also contribute to relatively cheap availability of soymeals.

The availability of non-GM soybeans on the world market is currently very limited. There are currently not enough non-GM soybeans available in the world to replace GM soybean and meal.

Feasibility of non-GM soya imports

The availability of non-GM soybeans on the world market is currently very limited. There are currently not enough non-GM soybeans available in the world to replace GM soybean and meal.

What if the EU did switch to non-GM soya imports?

Even a hypothetical scenario where GM soy was replaced with non-GM soy – a scenario that is impossible in reality given the lack of sufficient availability on the global market – would lead to an increase in feed costs of around 10% for the livestock sector. Moreover, even if farmers in the main soybean growing countries were persuaded to grow more non-GM soybeans (by offering a significant price premium compared to GM soybean prices) so that supplies were sufficient, practicability and cost implications would remain significant.

It is also very unlikely that alternative crop volumes can be cultivated in the EU. In terms of the crop rotation role that these break crops are mainly used for both rapeseed and sunflower cultivation levels have already reached their maximum in several major growing areas of the EU. In addition, any extension in the areas planted to these crops is likely to require planting in areas less suitable climatically for growing these crops. This is hardly a sustainable result.

EU protein crop yield

Slight yield increases on a stability area will result in a moderate production growth from around 1.9 million t in 2016 to 2.2 million t in 2030 for broad beans.

Source: EC agricultural outlook report 2017-203
Romania’s Soy Story

From 1999 to 2006, Romania cultivated herbicide tolerant (HT) GM soya beans. They accounted for 68% (about 137,000 ha) of all soya beans planted there in 2006. In 2007, cultivation then had to be stopped because the crop was never approved for cultivation by the EU, despite having pended in the EU approval system for many years. That same year, overall soya bean cultivation in Romania shrunk by about two thirds compared to 2006.²⁷

According to the former Romanian agriculture minister Tabara, Romania’s annual loss from not cultivating GM soya beans amounted to approximately EUR 1 billion.²⁸ Farmers who used HT GM soya beans indicated that it was the most profitable arable crop grown in Romania, with gains derived from higher yields and improved quality of seed coupled with lower costs of production. In 2006, the profit margin per hectare ranked between EUR 100 and EUR 187, while in the same year conventional soya bean growers were running losses. The increase in income was the result of herbicide cost reduction.²⁹ ³⁰

The EU has limited capacity to grow more oilseed and protein crops

If the area planted with oilseed increased, the production of other crops would likely have to fall significantly. For example, if a required 8.5 million ha of additional rapeseed plantings resulted in an equivalent fall in the area planted to wheat, wheat production would drop by roughly 45 million tonnes or almost one third of average production levels. As a result, the EU could become a net importer instead of being a long standing and reliable export source of quality wheat. Driven by a favourable policy environment, protein crops recently experienced a strong revival in the EU, with record production in 2017. Nonetheless, the EC outlook report underlines that given the pressure on feed prices, area growth may slow down. This, together with some yield improvements, will lead to an increase in production in the EU. With a share of only 1.4% of total crop area, however, the protein crop area will remain limited.

Likewise, if imported GM soybeans and soybean meal in France, Germany, Hungary and Poland could be replaced by extra soybeans grown in the EU, this would require an additional 5.1 million ha. If this extra soybean area resulted in reduced maize cultivation, the European maize crop would be reduced by at least 25 million tonnes. To offset this deficit more maize would have to be imported, with a major part of that potentially being GM maize, given that the majority of world traded maize comes from countries where GM maize is widely grown (e.g., the U.S. and Argentina) and available supplies from non-GM sources (e.g., Ukraine) are limited.
The Spanish case

Spanish GM soya imports during the 2000-2014 period have resulted in savings of at least 55,000 million euro. The attempt to replace GM soya imports with conventional imports would lead at national level to a 291% and 301% increase in the price of soybean and soymeal, respectively, in the short-term. Furthermore, such a replacement would lead to 49%, 54% and 85% increase in the cost of ingredients for feedstuff for cattle, pigs and poultry.

32 The Spanish case study was written by Professor Areal (University of Reading), in regard to the economic impact of not using GM soybean. Areal, F.J. Genetically modified soy, an irreplaceable raw material in the EU. University of Reading, United Kingdom. Retrieved from http://fundacion-antama.org/wp-content/uploads/2015/06/INFORME-IMPORTACION%2C-SOJA-MG-ENG-F-Antama.pdf
Biotech crops can help: An integrated approach needed to turn into sustainable solutions

The evidence suggests that closing the protein gap only by growing more protein crops in the EU would take very big efforts over many years. If the EU is serious about tackling the protein gap, it should invest more in research and recognize that discriminating against innovation and technology has actually widened the gap.

A realistic, two-pronged protein strategy

Any European initiative to increase locally produced proteins should understand the vital role of trade\textsuperscript{33}. Therefore, a two-pronged strategy seems the most promising:

- **Innovation for local protein production**: The Romanian soy story shows that profitable and competitive production of soya beans in parts of the EU would be possible if farmers were allowed to use modern technology. Given that GM crop technology has been all but expelled from the EU, the hope is that plant breeders and farmers will at least be allowed other modern tools of plant breeding innovation.

- **Smooth imports**: For years to come, protein imports will remain essential to bridge the gap. Smooth imports require a stable and predictable framework.
Protein imports will remain essential to bridge the gap.

The EU will undoubtedly remain reliant on imports of soya from abroad.

The EU is 70% dependent on imports of protein rich crops and has a self-sufficiency ratio of less than 5% for soybeans.

Soybeans are the main source of protein for our farm animals. In exporting Countries, the GM technology adoption reaches 90%.

The Romanian soy story shows that competitive production of soya beans in parts of the EU would be possible if farmers were allowed to use modern technology.

Plant breeding innovation can contribute to improving the nutritional quality of plant proteins.

GM crops and GM technology must be part of the solution of a new EU protein plan.

Nutritional and farming reasons dictate that not all soy in feed can be replaced by alternative protein sources.