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Markets for non-Genetically Modified, Identity-Preserved soybean in the EU

Pascal Tillie
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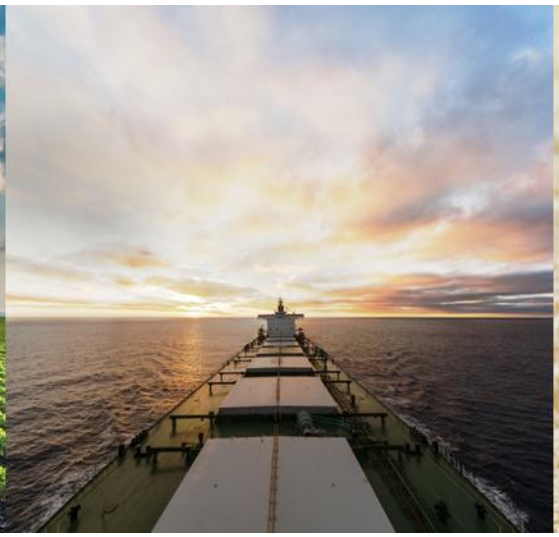


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Abstract

This report is based on a study whose main objective was to collect information about the functioning of the EU markets for non-Genetically Modified (non-GM), Identity Preserved (IP) soybean and derived products. Data on volume of imports of non-GM soybean and soybean meal, on the use of those by EU Member States and by the different feed sub-sectors, as well as on prices, were collected from different sources. In addition, a survey to 360 operators in the soybean supply chain was conducted.
Based on this study, we estimate that about 8.3% and 11.3% of the soybean and soybean meal imported by a group of 14 EU countries is segregated as non-GM. This represents about 2.7 million tonnes of soybean meal equivalent, mainly imported through the Netherlands, followed by Germany and France. However, the use of soybean meal for the production for non-GM IP compound feed is led by a different group of country that includes Germany, Hungary, France, the United-Kingdom, Sweden, Italy and Austria, by order of importance in absolute value. The demand for non-GM IP compound feed is driven by the poultry sector, followed by the cattle (for beef and dairy) and the pork sectors.

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Acknowledgments

This report is the result of a research project initiated by the JRC-IPTS with the organization of a workshop on "Markets for Non-GM IP crops" in June 2012, and which was continued with an in-depth study of the soybean supply chain in the EU. This study was conceived and managed by JRC-IPTS, while the market data collection and the completion of the survey were entrusted to the Société Générale de Surveillance (SGS) and Strategic Marketing Research & Planning (SMRP) companies. The authors are especially grateful to Mark Oulton (Global Agricultural Market Research Manager, SGS), Stefanie Whitfield (Principal, SMRP) and Mike Seiter (President/Principal, SMRP) for the attention given to the precision of the survey questionnaire, and the overall quality of the data collected. The advices and suggestions of Manuel Gomez-Barbero to improve the manuscript were also very much appreciated.

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Finally, we would like to express our appreciation to all the respondents in the survey to operators in the soybean supply chain conducted in the EU and abroad, for the time and dedication to answer the questionnaire. This report would not have been possible without their participation.

Disclaimer

The views expressed are purely those of the authors and may not in any circumstances be regarded as stating an official position of the European Commission.

Executive Summary

Worldwide, about 80% of the soybean area is planted with Genetically Modified (GM) varieties, and the trend is still increasing. All the major soybean producing countries have adopted this technology, and since they are also major exporters, the share of GM varieties in the volume of soybean and soybean meal exchanged on the international markets is also very high. However, the demand for non-GM soybean is relatively high in the European Union (EU), compared with other parts of the world. A legislative framework regulates the import and food/feed use of GM crops in the EU, requiring the mandatory labelling of food/feed ingredients that contains more than 0.9% of GM material. Therefore, the introduction of GM soybean in the supply chain has generated a system of segregation and identity preservation (IP) that is intended to make sure that the "non-GM" identity of soybean is preserved through the whole supply chain for those food/feed processors and final consumers that are demanding this characteristic.

This report presents information, until now very scarce, on ***the size and functioning of the EU markets for non-GM IP soybean and derived products***. Data on volume of imports, on use by EU Member States and by feed sub-sector, as well as on prices were collected from different sources, including operators in the EU supply chain.

In 2013, the ***EU consumed about 28 million tonnes of soybean and derived products, of which 95% was imported***. The main use of soybean products in the EU is for animal feeding, notably for animals that require feed with a high content of protein: principally poultry and pork, and to a less extent, dairy cows. With a content of protein of about 48%, soybean meal is by far the most cost effective source of proteins for these sub-sectors of the livestock production.

The study of the EU soybean supply chain underlying this report focused on a group of 14 EU MS that together represents more than 90% of the total EU imports of soybean products. According to our estimate, ***about 8.3% and 11.3% of the soybean and soybean meal, respectively, is imported as non-GM under segregation and identity-preservation schemes***. ***This represents about 2.7 million tonnes of soybean meal equivalent yearly***, with an approximate market value of 1.5 billion euros at current price (EUR 550 by tonne). Therefore the current EU market for non-GM IP soybean can hardly be considered a niche market.

The study shows that ***non-GM IP soybean is imported mainly through The Netherlands, followed by Germany and France***; however, countries that consume non-GM IP soybean or derived products do not coincide with importing countries. Indeed, ***the production of non-GM IP industrial compound feed is highly variable across EU countries*** and sub-sectors of animal production. On one extreme side, there are two EU MS, namely ***Hungary and Sweden, that produce almost exclusively their compound feed with non-GM IP soybean***. Both countries are rather small producers of compound feeds at the EU level, but have found a high specialization in the non-GM feed production segment. Austria ranks third in terms of the share of the compound feed production that is non-GM, driven by the poultry and dairy cattle sectors, but it does not represent large volumes in terms of absolute value.

On the other end of the demand spectrum, ***in Belgium, the Netherlands, Portugal and Spain, the use of non-GM, IP soybean in compound feed manufacturing is virtually non-existent,*** while these countries are relatively large producers of compound feeds at EU scale.

For the rest of the countries, the production of compound feed with non-GM IP soybean is variable and depends of the sub-sector of animal production considered. ***In Germany, the largest producer of compound feed in the EU, the demand for non-GM IP soybean derived feedstuffs is essentially driven by the poultry sector: about 50% of the production of poultry compound feed is non-GM, while the demand is much lower or null for the cattle and pork sectors***. This makes Germany the first producer of non-GM IP industrial compound feed in the EU by volume. ***In the United Kingdom, the share of poultry compound feed that is produced with non-GM IP soybean is about 28%.*** Finally, in Denmark, Ireland and Poland, the non-GM feed production is also exclusively driven by the poultry sector, but the total volume of non-GM IP poultry compound feed produced is much lower, either because of the rather limited total output (Ireland and Denmark) or because of the small proportion of it that is non-GM (Poland).

In contrast, ***in France and Italy the production of non-GM IP compound feed is demanded by the three main subsectors of animal production, poultry, dairy cows and pork***, even though the first two are more important both in terms of share and volumes.

The price premium for non-GM IP soybean meal, i.e. the difference between its price and the price for the non-segregated soybean meal, ***has usually been between 10 and 40 EUR per tonne. This represents around 5 to 15% of the price of the non-segregated soybean commodity***. However, this situation changed in late 2012, when the premium started to raise due to the imbalance between the Brazilian supply of non-GM IP soybean and the EU demand. ***Since early 2013, the premium for non-GM IP soybean meal represents between 20 to 30% of the price of non-segregated soybean meal,*** which, in the current context of high prices for agricultural commodities has generated premiums up to 180 EUR per tonne in some markets such as the UK. Therefore a rough calculation of the global premium paid yearly by EU importers for non-GM IP soy products (assuming a demand of some 2.7 million tons per year) will be in the range of the hundreds of millions of Euros.

This rise in the premium for non-GM IP soybean meal has obviously impacted the downstream users, among which the feed manufacturers and the producer of animal food products. The impact for the livestock sector, such as the transmission of the cost along the supply chain, depends on the intensity of the use of the non-GM IP soybean derived products, as well as on the possibility to substitute soybean by another source of protein. This makes ***the poultry sector the most vulnerable to premium increases, since there are very few alternatives to soybean to feed poultry in industrial production systems***. The dairy cattle sector is the less sensible to premium increases, while the pork sector is in-between.

A recurrent question is whether the non-GM IP soybean market in the EU will continue growing or will experience a contraction due to difficulties in supply availability and the resulting high premium. When asked directly, most of the operators in the non-GM IP soybean supply chain see the market to remain stable, and only a minor proportion believes that their non-GM soybean activities will shrink. However, this proportion is quite significant for traders, possibly because they are closest to the supply problems. But the overall opinion of the operators in the non-GM supply chain, including the retailers that wield most power of

negotiation, is fairly optimistic as regards to the future of the non-GM IP soybean supply chain.

The opinion of retailers is indeed one of the essential determinants of the future of the non-GM soybean markets, since their decision on to the type of products offered to consumers eventually impacts all the operators upstream in the supply chain. In the specific case of food products from "*animals fed with non-GM feed*", retailers usually decide which type of animal products will be offered and what will be the production standards for the "fed with non-GM" claim. It is worth mentioning that retailers' decisions in this area are influenced not only by economic gain considerations but also by the opinion of other organisations, such as consumers' or environmental ones.

But retailers' offer in this market, as seen in some recent cases, can be withdrawn if the availability of non-GM soybean for the EU market becomes difficult. The EU is highly dependent on the situation in Brazil. Therefore, the evolution of this market will depend on its ability to secure the supply of non-GM IP soybean from Brazil at affordable prices and the search for alternative suppliers. The success of both options will determine the future of the non-GM IP markets in the EU.

1 Introduction

Since biotechnology was introduced in agriculture in 1996, the area planted with Genetically Modified (GM) crops has dramatically increased to reach about 13% of global agricultural land in 2013 (James, 2013). Moreover, for major crops such as maize, soybean or canola, the share of area that is planted with GM seeds is much higher. But as the use of biotechnology in agriculture was taking off, so did the demand for crops produced without the use of this technology. Indeed, the introduction of GM crops in agriculture has generated a split in major grain markets, one of the most important changes for those commodity markets in the last decades. Obviously, this has important consequences for the majority of the operators involved in these supply chains.

The consumption of "non-GM" crops implies that the "non-GM identity" of the crop is maintained through segregation along the whole supply chain, a system known as "Identity Preservation" (IP), in order to deliver to food/feed processors and final consumers the specificity they are looking for. The development of non-GM IP supply chains has been fostered by private standards first, and then by public policies that, in some parts of the world, have made the labelling of products containing GM materials mandatory. For instance, in the European Union (EU), Regulations 1829/2003 [1] and 1830/2003 [2] control the placing on the market of food and feed containing GM crops and set the rules regarding the labelling and the traceability of these products. Food and feed containing more than 0.9% of GM materials have to be labelled as such. In addition to this positive labelling, there are a number of private labels and standards for "GM-free" food products – i.e. negative labelling – that have also structured the demand for non-GM crops within the EU, with different specifications (notably different threshold for the adventitious presence of GM materials). In all cases segregation and IP systems are required. In general, this segregation results in a price premium for the non-GM IP crops that illustrates both the preference of consumers for the products derived of non-GM IP crops and its additional cost due to the implementation of this segregation.

Unlike maize and oilseed rape, soybean is not grown in large areas within the EU, although it is highly demanded especially by the feed industry. As a result, virtually all – 98% – the EU consumption of soybean products is supplied with imports (Eurostat, 2014). Worldwide, about 105 million hectares of soybean were harvested in 2012, summing up to a world production of almost 242 million tonnes. Of all crops, soybean is the one with the highest adoption of biotechnology: in 2013, about 79% of the global soybean area was planted with GM seeds, mainly tolerant to herbicide. Three countries are responsible for more than three quarters of soybean global production (USA, Brazil and Argentina) and they are also the main exporters of soybean or soybean meal. Thus, most of the soybean and soybean meal volumes that are exchanged on the world markets is GM. The consequence of the abovementioned facts is that in order to satisfy the EU demand for non-GM soybean, a strong and efficient IP system involving many countries is required, while for other crops, this demand can generally be met with the EU domestic production.

[1] Link to Regulation 1829/2003
[2] Link to Regulation 1830/2003

However, despite the importance of the markets for non-GM IP soybean and derived products within the EU, they are still some dark areas regarding their functioning. The exact volume of non-GM IP soybean and soybean meal that is imported into the EU is still unknown, as well as its main market destination (in terms of food/feed markets and in terms of EU national/regional markets). The price premium for non-GM IP soybean is not officially recorded, and its determinants are still unclear. However, faced with uncertainty regarding the present and future availability of non-GM soybean to supply the EU demand, getting a better understanding on the markets for non-GM IP soybean and derived products is a desirable goal.

The aim of this report is to address some of these data gaps by providing new information regarding the EU markets for non-GM IP soybean and derived products, based on a study conducted in 2013-2014 for the European Commission JRC-IPTS, and that featured a dedicated survey to the EU operators in the soybean supply chain. Targeting the different types of operators involved in the EU soybean supply chain, from the importers of soy products to the retailers, this study provides the opportunity to gather quantitative data on the nature of the exchanges along the EU soybean supply chain, together with qualitative information regarding the functioning of the markets for non-GM IP soybean and derived products. Combined with the information already obtained through a specific expert workshop organized by JRC – IPTS in June 2012 on the "Markets for non-GM IP crops" (Tillie et al., 2012), this new research sheds some light on many of the issues related to the non-GM IP soybean markets in the EU, and that had never been investigated or published before.

This report is organized as follows: the following section provides the reader with basic information regarding the trade of major crops and recaps the development of segregation systems. Section 3 presents the first comprehensive description of the EU markets for non-GM IP soybean, notably volumes and prices, while section 4 focuses on the views of stakeholder regarding their involvement in the soybean supply chain (segregated or not). Finally, Section 5 concludes.

2 Background information

2.1 Recent facts in the production and trade of major GM crops

Seventeen years after their commercial introduction in 1996, GM crops covered in 2013 more than 175 million hectares worldwide (James, 2013). Adoption is still increasing but differences exist across crops and countries. The adoption of the GM technology is significant in four agricultural crops: soybeans, maize, canola and cotton. In 2013, GM soybean covered 79% of world's soybean area, GM cotton 70%, GM maize 32%, and GM canola 24% of the corresponding total cropped area. Adoption levels are very high for some countries in the world – e.g. USA, Argentina, Brazil – while in comparison, the cultivation of GM crops in the EU has been very limited for various reasons (see Table 1). In fact, the only GM crop grown in the EU is the Bt maize event MON810. In 2013 it was cultivated over approximately 150,000 hectares, most of them in Spain, representing only slightly more than 1% of the total EU maize acreage.

Table 1: Adoption rate of GM crops across main commodity producers (% of respective area)

	Soybean	Maize	Cotton	Canola
USA	93	90	90	93
Argentina	100	86*	100	n.c.
Brazil	92	81	47	n.c.
Paraguay	95	50	50	n.c.
Uruguay	100	n.c.	n.c.	n.c.
Canada	46*	58*	n.c.	96
India	n.c.	n.c.	95	n.c.
China	n.c.	n.c.	90	n.c.
Australia	n.c.	n.c.	99	10
European Union	n.c.	1	n.c.	n.c.

Note: n.c. indicates that there is no cultivation of the specified GM crop in a given country
Source: Data are for 2013 (James, 2013) while those with an asterisk are for 2012 (James, 2012).

In addition, countries with large adoption rates are often also major producing and exporting countries of crops listed in Table 1. This picture is clear for soybean, where five producing countries – USA, Brazil, Argentina, Paraguay and Canada – account for 86% of the world production, and 95% of the total exports. All these American countries, with the exception of Canada, have adoption rates for GM soybean higher than 90%. World production of maize, cotton and even canola show similar trend, meaning that an important share of the volume traded on world markets for those crops is GM.

2.2 The development of segregation systems for non-GM crops and its implications

The bulk of agricultural crops are traded as commodities, i.e. their harvest, transport, processing and trade is characterised by the aggregation of many consignments into bulk shipments of batches from different origins. Compliance with certain quality parameters is essential but what matters is the achievement of economies of scale. To allow for trading commodities of specific qualities, segregation systems have to be developed throughout the whole supply chain in order to ensure that the identity – the quality attributes – of the specific crops is preserved. This process, called Identity Preservation (IP), is not new in agriculture, however IP systems usually cover minor amounts of world production and trade in their respective commodities.

Within the EU, some operators in the food/feed chain have implemented a supply chain for non-GM crops and derived products, based on IP systems. The definition of what is a GM product is given by Regulations 1829/2003 and 1830/2003 that regulates the placing on the market of both food and feed containing, consisting or produced from GMOs (genetically modified organisms). These regulations also specify the rules concerning the labeling and the traceability of feed and food products produced from GM organisms: Regulation 1930/2003 defines a threshold of "0.9 per cent of the food ingredients considered individually or food consisting of a single ingredient, provided that this presence is adventitious or technically unavoidable", above which labelling requirement is obligatory. Together, both Regulations establish a mandatory positive labelling for products containing GM material. Recently, Regulation EC 619/2011 [3] complemented the legislative framework, and harmonized the implementation of the zero-tolerance policy for the presence of non-authorized GM material in feed. This whole legislative framework applies to every operator involved in the supply chain of GM crops and derived products in the EU. However, some private operators, in some occasions also supported by national EU governments, have set up additional standards often associated to labels, to ensure the delivery of "non-GM" products to consumers (Moses and Brookes, 2013). This, in turn, represents a negative labelling of products not containing GM materials, or up to a certain threshold.

In all cases, the existence of non-GM markets imply that non-GM products have to be segregated from the traditional grain commodity, in order to ensure that their non-GM identity is preserved throughout the whole supply chain, from production to end-consumers. The IP system implies that a whole system of standards and audits is in place at every stage of the supply chain, that establishes all procedures that needs to be undertaken, such as: testing for seed purity, ensuring crop production in fields clean from weeds and volunteers, proper field isolation to avoid contamination, cleaning and inspection of planting and harvesting equipment, multiple units for production segregation, cleaning and inspection of facilities used for transport, maintaining IP documents for handling and processing facilities, and proper labelling of segregated products (Sundstrom et al., 2002).

The introduction of GM crops in agriculture has resulted in the segmentation of some commodity grains markets (essentially soybean but in some circumstances also maize and canola) into three large categories: the conventional market (non-GM grain that is not identity preserved nor certified as such); the "mixed" one (GM and conventional crops mixed, undifferentiated, and sold and labelled if needed as GM) and the "non-GM IP" or identity-preserved crop market. The system should also be able to deal with the asynchronicity of GM event approvals: GM events approved in some parts of the world but in the EU for instance. If

[3] Link to Regulation EC 619/2011

those GM events that have not been approved in the EU are not segregated properly, there are risks of trade disruption if they are imported in this region (DG AGRI, 2010).

Segregation and IP systems generate costs and risks that vary across regions, due to different production patterns and infrastructure availability. Since segregation and IP systems have a cost, a premium is generally paid by buyers of non-GM IP crops or derived products, compared to the price of the corresponding non-segregated products. Stakeholders report that the price premium paid by EU importers of non-GM IP soybean meal has considerably increased in the last years, representing now more than 10% of the product price. In addition, evidences of a growing premium for non-GM IP canola already exist (Foster, 2010; Tillie et al., 2012). But overall, data are in general scarce and little is known about the distribution of this addition cost among the different types of operators in the non-GM supply chain.

Most of the soybean and soybean meal that is imported into the EU goes to the feed industry. Each year, the EU-28 consumes about 150 million tonnes of industrial compound feed, mainly for the poultry, pork and cattle (beef and dairy) sector, productions that require high concentrated energy and protein feed. While the EU imports smaller amounts of maize, wheat or canola, it has to import about 70% of the vegetable proteins used for feed. More specifically, in 2013, the EU imported about 67% of its yearly consumption of 28 million tonnes of soybean meal, while the rest was produced almost entirely from crushing imported soybeans (see Table 2). The main EU suppliers are countries from North and South America, where adoption of GM soybean by farmers is very high, raising concerns about the ability of the EU operators to supply the demand for non-GM IP soy-related products (soybean, soybean meal and other soy derived products) in the future.

Table 2: EU Trade balance for soybean and soybean meal

EU-28	2013 (MT)
Soybean imports	12,650
Soybean production	1,232
Soybean meal imports	18,700
Soybean meal production	9,938
Total soybean meal consumption	**27,970**

Source: USDA FAS PS&D

However, the exact size and evolution of such demand is poorly studied. No official statistics exist about the size of the EU markets for non-GM IP soybean and derived products, a market that is highly variable across country and product destination. This data gap also prevents any calculation of demand elasticity for food products elaborated with non-GM IP soybean[4].

While some Member States have a substantial demand (e.g. Austria, Germany, France, UK, Sweden or Italy), others have very small markets for non-GM IP soy (Spain, Portugal, Denmark, Netherlands for instance). The distribution of the demand for non-GM IP soybean meal across sub-sectors of animal production is also unknown. This lack of reliable data prevents any robust simulation of the possible evolution of these markets.

[4] Price elasticity of demand measures the how demand responds to a change in price; its calculation requires measures of quantity and prices at different points in time.

3 Methodology for the study on non-GM IP soybean markets

The objective of the study was twofold: (1) obtain basic data describing the EU markets for non-GM IP soybean and derived products, notably size and prices, and (2) survey the operators in the EU supply chain of soybean and derived products in order to elicit its functioning and governance. By the terms "soybean and derived products" we refer here to products deriving directly from soybean or from its sub-products, until the final consumption. This includes soybeans, soybean meal and pellets, animal feedstuffs containing soybean (compound feed), food products resulting from animals fed with the previous feedstuffs (namely eggs, poultry meat, pork meat and dairy products). Other sub-products of soybean, notably ingredients in the preparation of food products (soybean lecithin, soymilk, soybean bread, food oil, etc.), were voluntary excluded from the scope of the study, since food or industrial uses of soybean represent much smaller volumes than the use of soybean by the animal feed industry, and are also much more heterogeneous in nature and in final use.

The whole study was divided in two main components, which were conducted in parallel. On one side, market data for 2012, mainly volumes and prices, were collected at national level for 14 EU countries. On the other side, a survey to 363 operators involved in the EU soybean supply chain was conducted in order to obtain more specific information on the functioning of the chain and on the strategy of operators. The whole study was conducted between October 2013 and July 2014.

3.1 The market description: volumes and prices

Market data for non-GM IP soybean and derived products were obtained through consultations of different sources: official statistics when available, national experts or data maintained by private operators involved in the soybean supply chain. This market study was conducted over 14 EU countries that concentrates 91% of the total imports of soybean and soybean meal in the EU, namely Austria, Belgium, Denmark, France, Germany, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Spain, Sweden and United Kingdom. The objective was to collect historical data on prices and current volume exchanged on the market for the main non-GM IP soybean derived products: soybean, soybean meal and industrial compound feed containing soybean. In any case, the data obtained should be treated as the best estimates given the available information. The reference year for the data collected was 2012 since estimates for 2013 were not yet available at the time the study was completed.

3.2 Survey of the supply chain operators: sample selection and representativeness

In addition to this market research, the main methodological tool of the study was a dedicated survey of the EU operators in the soybean supply chain. To this end a questionnaire was designed and structured

around six different modules: basic information on the company's activities in the soybean supply chain, drivers of the decision to operate – or not – in the non-GM IP soybean markets, relationships in the supply chain, general attitudes towards GMOs and socio-demographic information about the respondent. A pilot survey was conducted in order to validate and fine-tune the questionnaire. We identified five types of operators with a major role in the EU soybean supply chain to be targeted by the survey: traders of soybean raw materials (or importers), crushers, feed manufacturers, producers of animal products and retailers. For issue of feasibility, only the large producers of animal products, namely cooperatives or integrated companies producing eggs, poultry meat, pork meat or dairy product, were included in the survey as producers of animal products. Individual farmers were excluded, as were slaughterhouses.

When approaching the companies, a special attention was paid to target the right respondent: a person in a strategic position within the company with a good knowledge of the company's strategy regarding the use – or not – of non-GM IP soybean or derived products. Depending of the category of the company, two different ways of completing the survey were used: traders, crushers and feed manufacturers' interviews were completed face-to-face, while producers of animal products and retailers were approached by phone. The survey was conducted in 15 EU countries that were selected according to the following criteria:

- Significant demand for soybean or soybean derived products, measured by the trade balance of soybean and soybean meal, and/or;
- Significant demand for non-GM IP soybean derived products, according to estimates provided by Tillie *et al.* (2012).

Based on these criteria, the 15 EU Member States included in the survey were: Austria, Belgium, Denmark, France, Germany, Hungary, Ireland, Italy, Netherland, Poland, Portugal, Slovenia, Spain, Sweden and United Kingdom. Together, they represent about 90% of total EU demand for soybean, and gather virtually all EU countries where some demand for a final animal food product derived from non-GM IP soybean exists.

The sample for the survey of the EU soybean supply chain was first stratified by type of operators, based on an estimate[5] of the number of operators by subsector of the supply chain (see Table 3), and then by country, based on data used as proxy for the activity in each subsector: imports of soybean/soybean meal as a proxy for trading activity, volume of crushing of soybean, consumption of soybean meal as a proxy for the production of feedstuffs containing soybean, consumption of industrial compounds as a proxy for the activity of producers of animal food, and country population for the activity of retailers. The breakdown of the sample across countries and type of operators is detailed in Table 4 and Table 5. In the sub-sectors of traders and crushers, virtually all operators active in the supply chain (i.e. the universe) were contacted to be surveyed, and all those that agreed to be interviewed are included in the final sample. Overall, the distribution of the sample fits well the distribution of companies across countries and sub-sectors.

In total, the sample includes 348 companies from 15 EU countries representing about 97% of the total EU imports of soybean and 93% of imports of soybean meal. Additionally, fifteen traders involved in the supply of soybean and/or soybean meal to the EU but not located in an EU Member State, were also surveyed as their views are also influenced by the EU markets for soybean or soybean derived products. Thirteen of them are located in Ukraine, while another two are based in Switzerland. The total sample

[5] These figures represent "high end estimates" since some company identified in one subsector may not actually operate with soybean or soybean derived products. This is notably the case for the crushers, where the figure of 50 companies is likely to overestimate those that are actually crushing soybean.

of 363 companies operating in the EU market for soybean and derived products represents a truly unique dataset of information not only about the functioning of this market, but also on the views and attitudes of the EU soybean supply chain and its gatekeepers.

Table 3: Estimated number of operators in the EU-28

Type of operator	Estimated number of operator
Soybean traders or importers	30 European + 10 International
Crushers/Refiners	50
Feed manufacturers	200 – 300
Animal feed producers	600
Retailers	15 – 30

Source: own estimates

Table 4: Distribution of surveyed operators per EU countries and sub-sector of activity (1/2)

	Traders and/or importers				Crushers				Feed manufacturers			
	Soybean and soybean meal imports[1] (2011-2013) (1000 T)	%	Number of surveyed operators	%	Soybean crushing (2009-2011) (1000 T)	%	Number of surveyed operators	%	Soybean meal use (2009-2011) (1000 MT)	%	Number of surveyed operators	%
Austria	535	1.4	3	8.8	17	0.1	1	4.5	439	1.6	2	3.4
Belgium	1,643	4.2	1	2.9	112	0.9	0	0.0	779	2.8	5	8.5
Denmark	1,593	4.1	3	8.8	65	0.5	0	0.0	1,502	5.4	5	8.5
France	3,866	10.0	3	8.8	538	4.4	1	4.5	3,935	14.1	7	11.9
Germany	6,722	17.4	5	14.7	3,000	24.6	4	18.2	4,505	16.1	8	13.6
Hungary	561	1.5	2	5.9	60	0.5	0	0.0	657	2.3	0	0.0
Ireland	403	1.0	1	2.9	13	0.1	0	0.0	387	1.4	2	3.4
Italy	3,311	8.6	2	5.9	1,589	13.0	5	22.7	3,363	12.0	8	13.6
Netherlands	8,204	21.2	6	17.6	2,329	19.1	1	4.5	2,510	9.0	7	11.9
Poland	1,935	5.0	1	2.9	13	0.1	1	4.5	1,836	6.6	4	6.8
Portugal	871	2.3	0	0.0	739	6.1	3	13.6	743	2.7	0	0.0
Slovenia	1,151	3.0	0	0.0	0	0.0	0	0.0	56	0.2	1	1.7
Spain	5,079	13.1	2	5.9	3,003	24.6	5	22.7	4,530	16.2	7	11.9
Sweden	264	0.7	2	5.9	17	0.1	0	0.0	266	1.0	0	0.0
United Kingdom	2,536	6.6	3	8.8	686	5.6	1	4.5	2,480	8.9	3	5.1
Total		**100.0**	**34**	**100.0**	**12,182**	**100.0**	**22**	**100.0**	**27,987**	**100.0**	**59**	**100.0**

Source: data for imports, crushing and meal use are from Eurostat.

Note: (1) total of intra and extra EU imports.

Table 5: Distribution of surveyed operators per EU countries and sub-sector of activity (2/2)

	Producers of animal products				Retailers			
	industrial feedstuffs consumption (2011) (1000 T)	%	Number of surveyed operators	%	Population (2012) (x1000)	%	Number of surveyed operators	%
Austria	1,250	0.9	4	2.0	8,466	2.0	3	8.8
Belgium	6,327	4.8	8	4.0	10,438	2.4	0	0.0
Denmark	4,115	3.1	3	1.5	5,543	1.3	1	2.9
France	19,297	14.6	39	19.6	65,776	15.2	8	23.5
Germany	22,201	16.7	33	16.6	81,306	18.8	3	8.8
Hungary	3,550	2.7	2	1.0	9,958	2.3	0	0.0
Ireland	3,757	2.8	3	1.5	4,722	1.1	2	5.9
Italy	12,770	9.6	20	10.1	60,821	14.1	3	8.8
Netherlands	12,710	9.6	26	13.1	16,802	3.9	1	2.9
Poland	7,770	5.9	2	1.0	38,415	8.9	0	0.0
Portugal	3,520	2.7	6	3.0	11,012	2.5	1	2.9
Spain	20,181	15.2	35	17.6	47,043	10.9	4	11.8
Sweden	1,750	1.3	1	0.5	9,104	2.1	1	2.9
United Kingdom	13,366	10.1	17	8.5	63,214	14.6	7	20.6
Total	**132,564**	**100.0**	**199**	**100.0**	**432,620**	**100.0**	**34**	**100.0**

Source: data for industrial feedstuffs consumption are from FEFAC and for population are from Eurostat.

4 Description of the EU markets for non-GM IP soybean and soybean derived products

4.1 Volume and share of non-GM soybean markets

The source for the information reproduced in this sub-section is the market description conducted in 14 EU countries (see Section 3.1 above). The market data are estimate for 2012.

4.1.1 Extra-EU Imports of non-GM IP soybean and soybean meal

In 2012, the EU-28 imported 19.5 million tonnes of soybean, in addition to 12.1 million tonnes of soybean meal or pellets[6], from third countries, i.e. excluding the intra-EU exchanges. Converted to soybean meal volume, the main form of use of soybean, this represents a total of 27.7 million tonnes of soybean meal equivalent. Within the sample of 14 EU countries for which market data were collected, 8.3% of the imports of soybean and 11.3% of soybean meal were non-GM IP in 2012. Considering the total volume of imports of these countries, this implies that at minimum, the EU imported about 0.96 million tonne of soybean and 1.95 million tonnes of soybean meal certified as non-GM in 2012 (see Figure 1), representing a total of 2.71 million tonnes of non-GM IP soybean meal equivalent. Overall, 10.2% of the soybean meal equivalent that was imported by the sample of 14 EU countries was non-GM IP segregated in 2012.

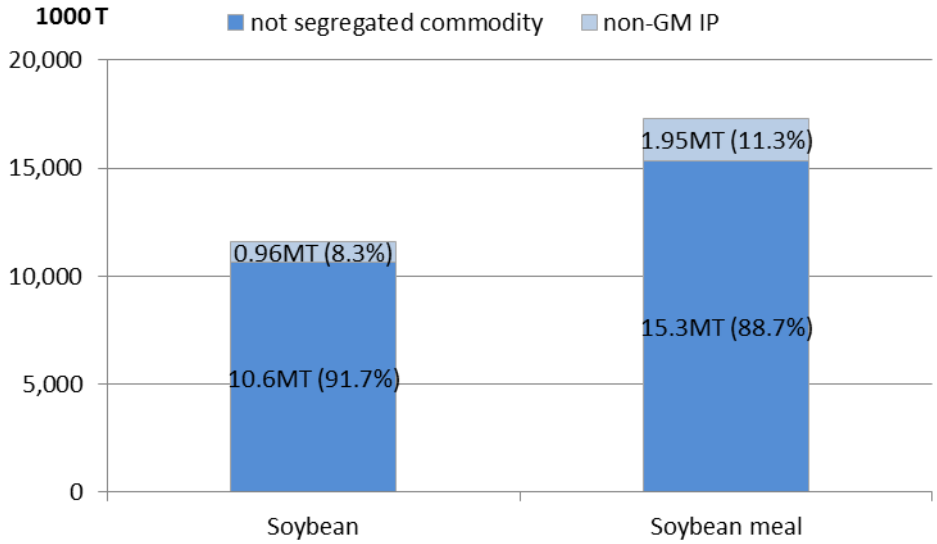
The largest EU importer of non-GM IP soybean and soybean meal is by far the Netherlands, followed by Germany. Together, these two countries represent about 57% of EU imports of non-GM IP soybean products (see Table 6 and Table 7). Hungary and Sweden rank first in terms of share of the total imports of soybean that is non-GM IP, since they only import this type of soybean products. On the other side, countries such as Poland, Portugal, and to a lesser extent, Spain and the United Kingdom, import none or only a small fraction of non-GM IP soybean. If these figures give some indications, it should not be concluded that no imports implies the absence of demand for non-GM IP soybean or derived products. Indeed, this table only reflects extra-EU imports, and not intra-EU exchanges. The Netherlands for instance, is clearly the main EU gateway for imports of soybean in general, as well as for non-GM IP soybean. But most of the volume of soybean that is imported by the Netherlands is re-exported to other EU Member States where the final consumption occurs.

In sum, the import data provides a reliable estimate of the actual share of the soybean demand that is non-GM, at EU level, since virtually all the final consumption of soybean in the EU in covered by imports. However, these data do not indicate which are the sectors and countries that drive the demand for non-GM IP

[6] Soybean pellets is produced from soybean meal by addition of a binder ingredient in order to obtain shaped pellets.

soybean within the EU. In fact, the production of non-GM IP industrial compound feed in the EU gives a picture that is closer to that of the actual demand for non-GM products.

Figure 1: Extra-EU imports of soybean products in 14 EU Member States (2012)



Source: own study.
Note that the total volume of soybean products imported by the 14 EU countries considered here represents 95.5% and 87.9% of the total EU imports of soybean and soybean meal, respectively.

Table 6: Extra-EU imports of non-GM IP soybean in 14 EU countries (2012)

	Total soybean imports	Non-GM IP segregated	
	(1000 T)	(1000 T)	(%)
Netherlands	2,738	356	13
Germany	2,289	229	10
Belgium	307	138	45
Spain	3,299	99	3
France	607	61	10
Italy	922	46	5
Hungary	12	12	100
Denmark	56	11	20
Sweden	5	5	100
Austria	3	1	25
Ireland	6	0	0
Poland	10	0	0
Portugal	604	0	0
United Kingdom	740	0	0
Total	**11,598**	**957**	
% non-GM IP	*8.3*		

Source: own study.
Note: countries in this table are ranked by decreasing volume of imports of non-GM IP soybean.

Table 7: Extra-EU imports of non-GM IP soybean meal in 14 EU countries (2012)

	Total soybean meal imports	Non-GM IP segregated	
	(1000 T)	(1000 T)	(%)
Netherlands	4,806	721	15
Germany	1,787	357	20
France	2,455	246	10
Denmark	1,214	243	20
Sweden	216	216	100
United Kingdom	1,413	71	5
Italy	1,374	69	5
Ireland	327	26	8
Hungary	3	3	100
Austria	4	1	20
Belgium	447	0	0
Poland	1,258	0	0
Portugal	199	0	0
Spain	1,787	0	0
Total	**17,290**	**1,951**	
% non-GM IP	*11.3*		

Source: own study.
Note: countries in this table are ranked by decreasing volume of imports of non-GM IP soybean meal.

Table 8: Total extra-EU imports of non-GM IP soybean meal equivalent products in 14 EU countries (2012)

	Total soybean meal equivalent imports	Non-GM IP segregated	
	(1000 T)	(1000 T)	(%)
Netherlands	6,973	1,003	14.4
Germany	3,599	539	15.0
France	2,936	294	10.0
Denmark	1,258	252	20.0
Sweden	219	219	100.0
Belgium	690	109	15.8
Italy	2,104	105	5.0
Spain	4,399	78	1.8
United Kingdom	1,999	71	3.5
Ireland	331	26	7.9
Hungary	12	12	100.0
Austria	6	1	21.8
Portugal	678	0	0.0
Poland	1,266	0	0.0
Total	**26,472**	**2,709**	
% non-GM IP	*10.2*		

Source: own study.
Note: countries in this table are ranked by decreasing volume of imports of non-GM IP soybean meal equivalent. The conversion rate between soybean and soybean meal used for this table is 0.79.

4.1.2 EU production of industrial compound feed certified as non-GM

Figure 2 maps the production of certified non-GM industrial compound feed at the EU level in 2012, while Table 9, Table 10 and Table 11 display the data for 14 EU Member States[7] by type of animal production this production is intended for: poultry (that includes both the production of poultry meat and eggs), cattle (beef and dairy) and pork. The production of compound feedstuffs for animals is the main use of soybean within the EU, far before the direct human consumption of food containing soybean. Therefore, the data released here give the best indication of the subsectors that are demanding non-GM IP soybean meal, in a set of countries that together were responsible for about 92% of the total EU-27 production of animal feedstuffs in 2012[8]. In addition, since the production of industrial compound feed generally occurs near its place of consumption by the producers of animal products, these data also give a good indication of the actual demand for animal products fed with non-GM feed, by country.

According to our estimate, about 11.9% of the total volume of industrial compounds produced in these 14 EU countries was certified non-GM in 2012. The share of feedstuffs that is certified as non-GM varies across the different animal subsectors surveyed in the study (see also Figure 3): the poultry subsector leads the EU demand for non-GM IP soybean with about 21% of the volume of produced feedstuff that is certified non-GM, while the pork subsector lags behind with less than 5% of the industrial compound production that is non-GM. For the dairy and beef cattle subsectors, the share is about 9%.

Within each animal subsector, the situation is highly changing from one country to another and reflects somehow the differences in demand from the animal food product industry. In Hungary and Sweden for instance, almost all the feedstuffs that are produced are non-GM, regardless of the subsector they are intended for. As a consequence, these two countries are major consumers of non-GM soybean in the EU, not only in share but also in volume.

Regarding non-GM IP industrial compounds for poultry, it is produced in ten countries out the 14 that were surveyed, and in most of them in a very significant share. Besides Hungary and Sweden already mentioned, the proportion of poultry feedstuffs that is non-GM IP is high in Austria (85%), followed by Germany (49%), Ireland (38%), Denmark (28%) and the United-Kingdom (28%). In absolute terms, Germany is by far the first EU producer of non-GM feedstuffs for poultry, followed by the UK and Hungary. Together these three countries account for two third of the EU production of non-GM poultry industrial compounds.

The production of industrial compounds for dairy and meet cattle exhibits a very different pattern. Only six countries within those included in the sample have some production this category of non-GM industrial compound: behind Hungary and Sweden, the only countries with a significant share of non-GM are Austria (56%), and to a lesser extent, France (19%), Italy (11%) and Germany (9%). In absolute volume, France is the first EU producer of non-GM industrial compounds for cattle, closely followed by Sweden, Germany and Hungary.

Finally, the production of industrial compounds for pork show an even more divided situation: Hungary alone produced in 2012 about 60% of all EU industrial compounds for pork certified non-GM, and the rest is divided within only four other producing countries (France, Sweden, Italy

[7] This sample of 14 EU Member State is responsible for 93%, 93% and 91% of the total EU production of cattle, pork and poultry industrial compounds, respectively.

[8] An important precision is required here: feedstuffs that are certified as non-GM do not necessary content non-GM IP soybean. Indeed, one strategy of the feed manufacturer to avoid the presence of GM materials is to use substitute for soybean, such as canola for instance. However, due to the high energetic requirement of feedstuffs, this is not always possible. Industrial compounds for poultry, for instance, can hardly be produced without soybean, while there is more flexibility for compounds aimed at feeding dairy cows or swine.

and Austria). This is because on one side, Hungary and Sweden produce exclusively non-GM industrial compounds, while on the other side, Austria, France and Italy produce between 5 and 7% of non-GM IP industrial compounds for pork.

Looking at the other side of the coin, there are also some EU countries that do not produce non-GM feedstuffs at all: this is the case of Belgium, the Netherlands, Spain, Portugal, and to the exception of a small amount of non-GM pork industrial compound feeds, Poland. In these countries, despite sometimes important volume of non-GM IP soybean or soybean meal imports, the industrial feed compound industry do not produce animal feeds certified as non-GM. The Netherlands, in particular, is mainly an entry point in the EU for non-GM IP soybean and soybean meal, but not an important consumer of products derived from it.

Figure 2: Share of the production of industrial compound feed that is non-GM, by EU Member States (map)

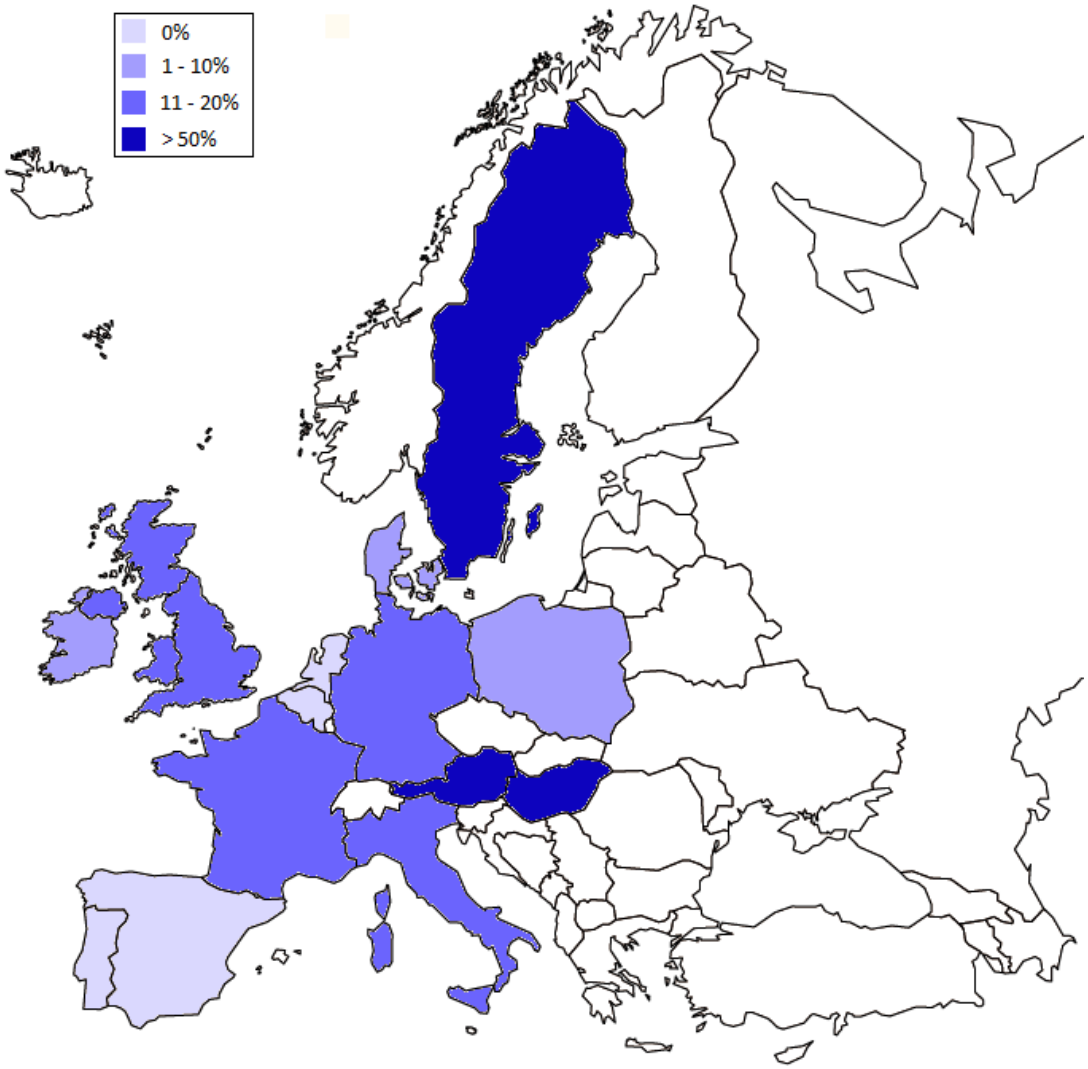


Figure 3: Production of industrial compound feed for poultry, cattle and pork, non-GM IP and not segregated, in 14 EU countries (2012)

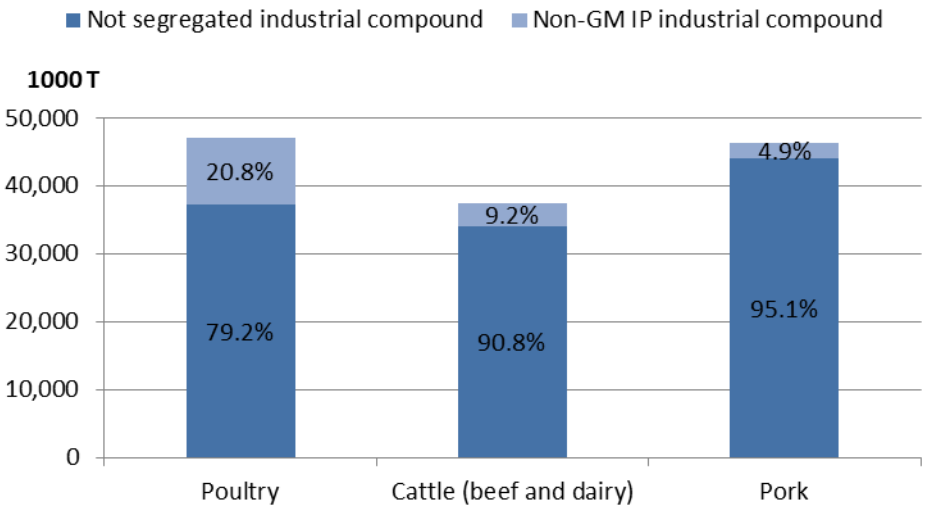


Table 9: Production of certified non-GM IP industrial compound feed for poultry in 14 EU countries (2012)

	Industrial compound for poultry		
	Total production (1000 T)	non-GM IP production* (1000 T)	Share of total production that is non-GM (%)
Germany	6,110	3,002	49
UK	6,606	1,839	28
Hungary	1,640	1,640	100
Italy	5,770	870	15
France	8,606	862	10
Sweden	554	554	100
Austria	504	428	85
Poland	5,233	267	5
Ireland	501	192	38
Denmark	548	155	28
Belgium	1,392	0	0
Netherlands	3,802	0	0
Portugal	1,410	0	0
Spain	4,409	0	0
Total	47,085	9,809	
% non-GM IP	*20.8*		

Source: own study
*this refers to the production of industrial compounds that is actually certified as non-GM
Note: countries in this table are ranked by decreasing volume of production of non-GM IP industrial compound

Table 10: Production of certified non-GM IP industrial compound feed for cattle in 14 EU countries (2012)

	Industrial compound for cattle (beef and dairy)		
	Total production (1000 T)	non-GM IP production* (1000 T)	Share of total production that is non-GM (%)
France	4,542	862	19
Sweden	932	850	91
Germany	6,561	584	9
Hungary	530	530	100
Italy	3,450	372	11
Austria	472	266	56
Belgium	1,010	0	0
Denmark	695	0	0
Ireland	2,276	0	0
Netherlands	3,456	0	0
Poland	962	0	0
Portugal	620	0	0
Spain	7,060	0	0
UK	4,898	0	0
Total	37,464	3,464	
% non-GM IP	*9.2*		

Source: own study
*this refers to the production of industrial compounds that is actually certified as non-GM
Note: countries in this table are ranked by decreasing production of non-GM IP industrial compound

Table 11: Production of certified non-GM IP industrial compound feed for pork in 14 EU countries (2012)

	Industrial compound for pork		
	Total production (1000 T)	non-GM IP production* (1000 T)	Share of total production that is non-GM (%)
Hungary	1,380	1,380	100
France	5,516	400	7
Sweden	312	312	100
Italy	3,360	170	5
Austria	274	14	5
Belgium	3,682	0	0
Denmark	2,649	0	0
Germany	9,721	0	0
Ireland	701	0	0
Netherlands	5,451	0	0
Poland	1,816	0	0
Portugal	870	0	0
Spain	8,758	0	0
UK	1,858	0	0
Total	46,348	2,275	
% non-GM IP	*4.9*		

Source: own study
*this refers to the production of industrial compounds that is actually certified as non-GM
Note: countries in this table are ranked by decreasing production of non-GM IP industrial compound

4.2 Price and cost of non-GM IP soybean and soybean meal

Data on price for non-GM IP soybean and derived products, as well as for the difference with the price of soybean commodities – i.e. the "price premium" – were some of the most obvious information gap identified during the June 2012 workshop organized by JRC-IPTS. Indeed, most of the main database on agricultural prices only report soybean or soybean meal commodity prices, but do not distinguish with non-GM IP products. For a long time, the Tokyo Grain Exchange has been the only official source for data on non-GM premium, based on futures contract for non-GM soybean and soybean meal. But data are not anymore available since the end of 2008. Since then, operators in the supply chain or certifiers are the only available source of information for these prices.

The existence of a price premium for non-GM IP soybean derived products is explained by the following factors:

- The opportunity cost for growing non-GM soybean: farmers growing non-GM soybean in origin countries have to be compensated by higher output price for the foregone benefits of not planting GM soybean, usually regarded by growers as more efficient and more flexible than non-GM varieties.
- Cost of preserving the identity of the non-GM soybean: this includes all costs related to the implementation of segregation within the supply chain (storage, handling and transport) and to its management (specific systems, administrative burden). This also includes the certification costs, which can be internal or external (third party).

In addition, the price premium is also influenced by the relative evolution of demand and supply for both types of soybean products.

4.2.1 Monthly series for non-GM IP soybean price and premium

The data published cover four countries and two products. The full description of the price series is as follows:

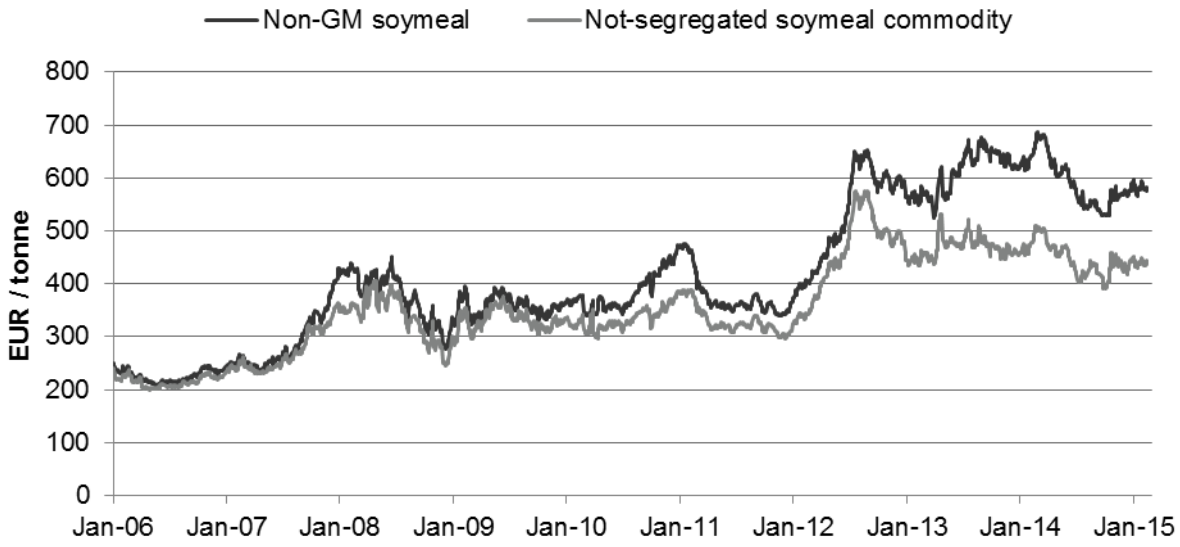
- Austria: prices for soybean meal, minimum 47% protein and 49% profat[9], for both GMO-free and GM, spot price based on shipments (CIF) in Aschach/Pöchlarn harbours at the Danube in Upper Austria (average of daily price), from various origin, 2004-2014;
- France: prices for soybean meal, minimum 49% profat, for both non-GM and GM, spot price based on delivered crush, origin unspecified, 2007-2012
- Germany: prices for soybean meal, minimum 48% profat, for both non-GM and GM, spot price based on delivered crush, origin Brazil, 2009-2014;
- United-Kingdom: prices for soybean meal, minimum 48% profat, for both non-GM and GM, 1 month forward price, delivered crush, origin US, Brazil and Argentina, 2006-2015.

After reaching a historic low in 2003, the prices of most agricultural commodities have followed an upward trend and they are likely to remain at a relatively high level over the next decade (FAO, 2011). Figure 4 shows that the price of soybean meal has followed the same tendency. From about EUR 200/tonne in 2006, the price of soybean meal has raised to more than EUR 400/tonne during the first half of 2014. As expected, the price of non-GM IP soybean meal observed a similar pattern, even more pronounced since it has gone up threefold over the same period. The non-GM IP soybean meal is always more expensive than the soybean commodity, although in some period both prices were relatively close. This difference corresponds to the "premium" for the non-GM

[9] The "profat" figure is the total content of protein + fat. For example "49% profat" means that the soybean meal contains 48% protein + 2% fat.

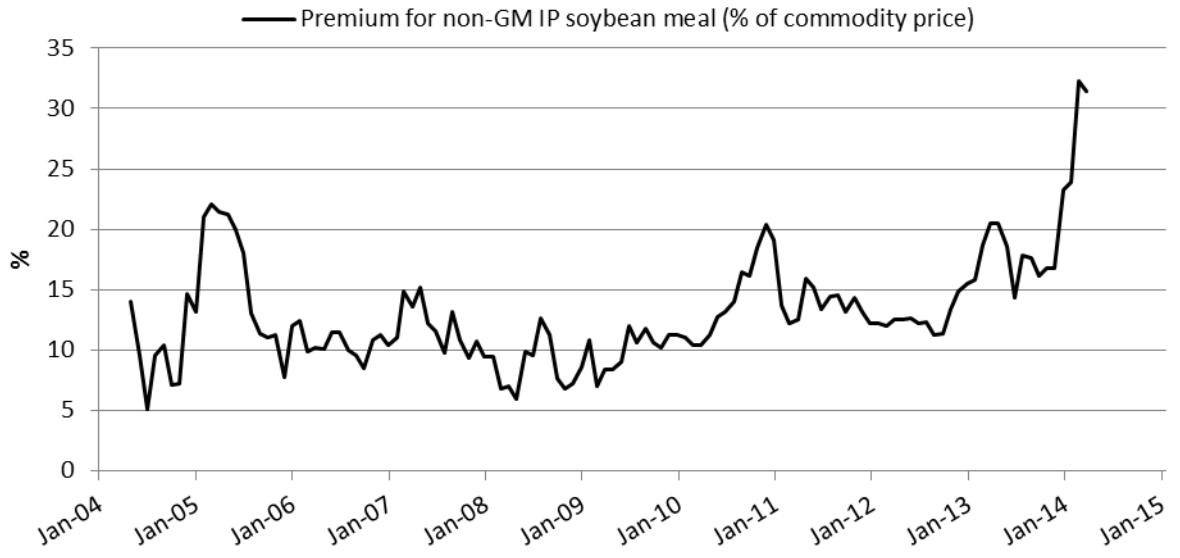
attributes of soybean, and reflects the market. equilibrium between supply and demand in the

Figure 4: Nominal price of GM and non-GM IP soybean meal in UK, 2006-2015



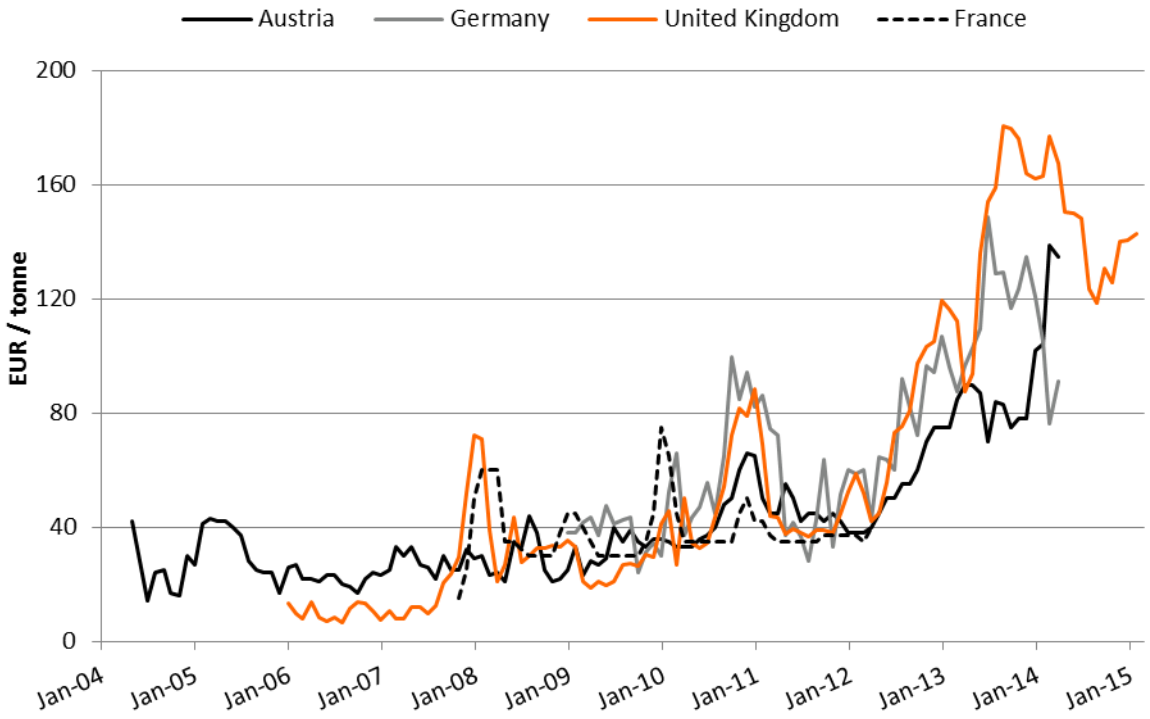
Source: Humphrey Feeds Limited

Figure 5: Price premium for non-GM soybean meal as a percent of soybean meal commodity price in Austria, 2004-2014



Source: own study, data for Austria

Figure 6: Price premium of non-GM IP soybean meal in 4 countries, 2004-2015



Source: various, own study

Over the period 2004-2014, the premium for non-GM IP soybean meal has always been comprised between 5 and 35% of the commodity price of soybean meal (see Figure 5). In fact, it is usually below 15%, and only in some relatively short episodes it has exceeded this level. However, since the last quarter of 2012, the premium for non-GM IP soybean meal has displayed a dramatic increase up to a level unseen before. This high level is mostly the results of the concerns about the availability of non-GM IP soybean in Brazil, together with the rising cost of segregation in the context of a growing share of the total soybean area planted with GM varieties in this country. Usually, the issue of availability of non-GM IP soybean from Brazil is particularly acute at the end of the year, when end-of-year stocks become scarce and before the new harvest starts to be exported in February.

Since the second quarter of 2012, the premiums for non-GM IP soybean and soybean meal have reached historically high levels, exceeding EUR 120 by tonne during many months (see Figure 6). This has triggered some adaptations in the demand and supply sides. Regarding the first, some industries that were using large volume of non-GM IP soybean meal have changed their policy and have moved back to using GM soybean. This is notably the case of the eggs and poultry industry in the UK, Denmark, and partially in Germany. On the supply side, the importers have found some new source of supply of non-GM IP soybean in order to avoid the high premiums observed in Brazil due to its lack of availability. One of these new sources is India, where the quality of the production has increased in the last years. Together, these two movements have released some pressure on the availability of non-GM IP soybean meal, and the premiums have recently slightly decreased in some markets, as shown by the most recent figures for premiums in Germany and the UK (see Figure 6).

4.2.2 Transmission of the cost of non-GM IP soybean and derived products at the different levels of the supply chain

The use of non-GM IP soybean products as input in the supply chain implies additional costs for the operators, as reported above. At a given moment, this additional cost may vary according to the soybean product and the threshold for the unintended presence of GM materials considered. Regarding the type of soybean product, the reasons why the non-GM IP characteristic brings higher cost are summarized in Table 12. The possible coexistence measures at farm level, the segregation along the supply chain and the costs of certification and testing are the main reasons justifying a higher cost for non-GM IP soybean products.

Table 12: Source of additional cost for users of non-GM IP soybean and derived products

Non-GM IP soybean product	Sources of higher cost
Soybean	- coexistence at farm level - premium paid at farm gate - segregation in transport from origin country to the EU - certification and testing - higher cost of non-GM IP soybean
Soybean meal	- segregation at crusher level and transport - certification and testing - higher cost of non-GM IP soybean meal
Industrial compound certified non-GM	- segregation in feed manufacturing plant and transport - certification and testing - insurance cost

The actual additional cost for the non-GM IP soybean and derived products, acquired by means of our survey to the operators in the supply chain (see part 3.2), are presented in Table 13. They are in line with the data already described in the point 4.2.1 of this report at the time the survey was completed (Feb-March 2014). The data show that the additional cost for non-GM IP soybean product differs according to the threshold for the presence of GM material used by operators, but this difference remains rather low and is never statistically significant (though this is mostly explains by the small number of observations). Having said that, purchasing non-GM IP soybean products with a 0.1% allowed threshold for the presence of GM material is on average more expensive than maintaining a 0.9% threshold, as could be expected.

Moreover, the data displayed in Table 13 also shows how the additional cost for the different non-GM IP products diverges. The significant difference between the price of non-GM IP soybean and non-GM IP soybean meal can be explained by both the crush ratio and the additional segregation cost. Indeed, the processing of 1 ton of soybean meal requires about 1.25 ton of soybean, and this factor is mechanically reflected in the price of soybean meal. In a similar manner, the additional cost for animal industrial compound feed that is certified as non-GM is influenced by its soybean meal content, which varies according to the animal species for which it is intended. It is generally comprised between 10% for dairy cattle and up to 40% for broiler poultry. To this higher input cost, producers of industrial compounds have to add the cost of ensuring the preservation of the non-GM identity of the final product. This is achieved by segregating both supply chains, either by preventing any commingling between GM and non-GM products on one given production site, or by spatially separating the two types of products on different production plants.

For producers of animal products, purchasing non-GM compound feed implies a cost that is increased by 17 to 21%, depending on the threshold for the presence of GM material used by the feed manufacturer. This substantial increase has to be compared to the overall cost structure of animal products in order to assess its impacts on the total cost. Table 14 presents

the results of an estimation of this impact on the in-farm cost of production of three animal products, based on two different levels of additional cost for non-GM IP compound feed: 20% and 40%. The 20%-increase reflects the actual additional cost observed at the time the survey was completed (first quarter of 2014), while the second hypothesis is aimed at simulating the impacts of a dramatic increase in the price of non-GM IP soybean.

Table 13: Additional cost of non-GM IP soybean and derived products according to the threshold for presence of GM material

Type of product	Additional cost for non-GM IP product with a 0.1% threshold		Additional cost for non-GM IP product with a 0.9% threshold	
	Euro per tonne	percentage increase	Euro per tonne	percentage increase
Soybean	54.7	17.2%	42.4	14.1%
Soybean meal	88.6	20.3%	81.1	19.9%
Compound feed	60.7	20.8%	52.5	16.9%

Source: own survey to operators

Table 14: Increased cost for poultry, dairy and pork producers due to the purchase of non-GM IP compound feed

	Actual cost structure			20%-increase in feed cost			40%-increase in feed cost		
	Feed cost	Total operating cost	Purchased feed cost / total cost[a]	Feed cost (non-GM)	Total op. cost	Total cost[a] increase	Feed cost (non-GM)	Total op. cost	Total cost[a] increase
Per kg of product	euro cents	euro cents	%	euro cents	euro cents	%	euro cents	euro cents	%
Live broiler	60.8	91.1	64	73.0	103.3	13	85.2	115.5	26
Dairy milk	8.0	22.5	25	9.6	24.1	5	11.2	25.7	10
Fattening pig	76.0	118.1	48	91.2	133.3	10	106.4	148.5	19

Source: Data on cost structure are from European Commission – EU FADN (2014) and von Horne and Bondt (2013), they are for 2011 for broiler and milk and 2010 for fattening pigs.

Note: [a] total cost represents the sum of operational and non-operational costs (depreciation, wages, rent and interests)

The transmission of the higher cost of industrial compounds certified non-GM to the total cost of animal products logically depends on the relative importance of the feed costs in the total cost of production. The cost of purchased feed represents about two thirds of the total cost of production of a live broiler chicken, and therefore a 20%- to 40%-premium for industrial compound feed that is certified non-GM is likely to produce a rise in the total production cost of broiler of about 13 to 26% at farm gate. Since the feed cost represents a smaller share of total cost of production of milk, the same range of premiums is estimated to pull up the farm gate price of milk by only 5 to 10%. In absolute terms this represents less than 2 euro cents per kilogram of milk for the conservative hypothesis, and about 3.6 euro cents in the case the premium for non-GM industrial compound feed would double. The effect on the farm cost of production of pork meat falls somewhere in-between the two previous, the impact on the cost of one kilo of pork meat being in the range of 15 to 30 euro cents.

In addition, it is worth stressing that the farm gate price of animal products is only a share of

the final price consumers will pay for end food products. Other costs are added between the farm and the shelves, for transport and handling, transformation, packaging, marketing, etc. This will further dilute the premium for the non-GM IP industrial compounds used to feed the animals in the final shelve price for consumers.

4.2.3 Retail price of animal food fed with non-GM feed

Analysing the transmission of increased cost of production due to the use of non-GM IP compound feed to retail price is not straightforward. First, not all animal products produced with non-GM feed are eventually labelled as such when marketed. In many occasions, retailers may request the use of "GM-free" compound feed by their providers through the establishment of standards of production, but this characteristic of the product will not appear on its label. One of the reasons is that retailers may prefer to keep awareness of the issue among consumers at a rather low level, although they would be able to prove that the animal product in question has been produced without the use of feed containing GM materials. Second, in the case a particular product is labelled as "fed without GM", this attribute often comes with other high-quality attributes more or less tangible, such as sustainably-farmed, hormone-free, steroids-free, pastured-raised, free range or cage-free for eggs and poultry, etc. In this situation, it is almost impossible to isolate the share of the price increase that is due to the single "GM-free" statement. Third, the comparison of the retail price of an animal product labelled as "fed without GM feed" usually lacks a counterpart, i.e. a product with the same or similar characteristics, but without the label in question.

Despite the difficulties mentioned above, the retailers interviewed for the JRC-IPTS survey were asked to estimate the relative difference between the price of the animal products labelled as fed without GM feed and the non-labelled products that they have on their shelves. The results are displayed in Table 15. They show a rather consistent picture where the average price for "GM-free" poultry meat, eggs, milk and pork meat is between 12.7 and 16.4% higher than the price of unlabelled products. The order of magnitude of this price difference, as well as the relative figures between animal products, fit very well with the estimated increase in cost of production presented in Table 14. Therefore, they can be regarded as good estimates of the actual price difference for animal products labelled as "fed without GM feed", although they may not be representative of all animal products "produced without GM feed".

Table 15: Retail price difference (%) for animal products labelled as fed with non-GM feed compared to non-labelled products

	Price difference (%)		
	Mean	St. Error	Nb. of obs.
Poultry meat	16.2	2.76	11
Eggs	16.4	4.09	11
Milk	12.7	7.98	9
Pork meat	14.0	2.02	10

Source: own survey to operators

5 Activity of operators in the GM and non-GM IP soybean supply chains: views of the gatekeepers

Thought final consumers express their preferences each time they make a purchase, in many circumstances the choice they are making is constrained by the number of options they are faced with. Gatekeepers are the people that are in a position to decide the range of products that will be available for the final consumers, by taking decision at the different step of the supply chain: importers and distributors, ingredient buyers for food manufacturer, food product buyers for retailers or for the catering sector. The primary role of gatekeepers is to anticipate consumers' demand by identifying those products that should be placed on supermarkets' shelves. However, they also need to pay an increasing attention to the opinions expressed by the civil society, opinion leaders and especially NGOs, which are observing with a certain scrutiny the decisions taken by large companies, notably retailers. In sum, because they have the very specific task of deciding what the strategy of their company will be and because their purchase decisions impact many final consumers, gatekeepers wield a large power within the supply chains (Knight and Paradkar, 2008).

By consequence, gatekeeper's views and perceptions are essential to analyse and anticipate the purchase decisions they are making. This is also true when it comes to understand the participation of companies in the GM or non-GM IP soybean supply chain. However, while consumer perception towards GM foods have been extensively researched (see Lusk et al. (2005) or Dannenberg (2009) for instance) there have been much fewer interest for the opinions of gatekeepers regarding their operations involving GM soybean. Some studies have been conducted in India (Knight and Paradkar, 2008), China (Knight and Gao, 2009) or Kenya (Bett et al., 2010) but to our knowledge, this has never been done before in the European Union.

Therefore, filling this gap was one of the objectives of the JRC-IPTS survey to the operators in the EU soybean supply chain. The questionnaire included a module on the activity of the company in the GM and/or non-GM soybean supply chain as well as on the attitudes, perceptions and knowledge of the gatekeepers regarding GM crops and food. Some of the results of this survey are published below.

5.1 Participation in the non-GM soybean supply chain

The respondents in the JRC-IPTS survey were asked whether their company was active in the non-GM soybean supply chain in 2013, and how they believe this activity would evolve in the

next five years. The same questions were repeated for the activities in the GM soybean supply chain. The answers to these questions are summarized in Table 16, Table 17 and Table 18.

Overall, about 59% of the respondents stated that they had activities in the non-GM IP soybean supply chain in 2013, 67% that they were operating in the GM soybean supply chain, while 30% had activities in both. This pictures a quite divided situation, with most operators being specialized in one of the two markets. The share of operators involved in the non-GM IP soybean supply chain is lower for those that are in the middle of the chain (crushers, animal feed producers and producer of animal food products, between 48% and 56%) than for those that are at its ends (traders and retailers, between 72% and 78%). This reflects the fact that the majority of traders or retailers, that are relatively few and large companies, are operating in both the GM and the non-GM markets, while others operators which are more numerous and smaller tend to specialize in one of the activity. The reader should nevertheless pay attention to the fact that the figures displayed here represent the share of operators and not of the volume of soybean.

Regarding the expected evolution of the activities of the surveyed companies in the non-GM soybean supply chain, they will increase for 22% of the respondents while 65% believe that they will remain the same and only 13% foreseen a decrease. The expected evolution of the participation in the GM soybean supply chain is similar, the only substantial difference being these companies are less doubtful regarding the future of their participation in this market. Fewer companies believe their participation in the GM soybean supply chain is likely to decrease, and this is more pronounced for upstream companies, such as the traders, the crushers and the feed processors

Altogether, the figures on the likely evolution of activities indicate a possible further specialization of companies in either the GM or the non-GM soybean markets. It is also worth mentioning that retailers are forecasting a clear enlargement of their activities involving non-GM IP soybean. This is all the more important given that retailers are among the most influential operators in the supply chain, with the ability to impose their views to their providers.

Table 16: Share of operators involved in the non-GM IP soybean supply chain and expected evolution of this activity, by subsector

	Operate in non-GM market	Likely evolution of activities in the next 5 years		
	%	Increase	Steady	Decrease
Trader	78	36	28	36
Crusher	48	21	63	16
Animal feed processor	56	14	67	19
Producer of animal food product	55	20	71	9
- Eggs	51	18	74	9
- Poultry	55	21	72	7
- Pork	51	18	69	12
- Dairy	68	22	70	7
Retailer	72	31	66	3
All Operators	**59**	**22**	**65**	**13**

Source: own survey to operators

Table 17: Share of operators involved in the GM soybean supply chain and expected evolution of this activity, by subsector

	Operate in GM market	Likely evolution of participation in next 5 years		
	%	Increase	Steady	Decrease
Trader	67	36	48	15
Crusher	70	42	58	0
Animal feed processor	80	53	47	0
Producer of animal food product	67	13	77	10
- Eggs	73	14	80	6
- Poultry	57	7	81	12
- Pork	76	18	74	9
- Dairy	58	13	75	13
Retailer	47	15	79	6
All Operators	**67**	**22**	**69**	**8**

Source: own survey to operators

Table 18: Share of operators involved in the non-GM IP soybean supply chain and expected evolution of this activity, by country

	Operate in non-GM market	Likely evolution of activities in the next 5 years		
	%	Increase	Steady	Decrease
Austria	92	42	42	17
Belgium	64	17	83	0
Denmark	75	30	30	40
France	69	17	70	13
Germany	64	25	62	13
Hungary	75	75	25	0
Ireland	75	17	33	50
Italy	74	16	73	11
Netherland	38	16	72	12
Poland	100	25	75	0
Portugal	40	14	86	0
Spain	10	7	90	2
Sweden	100	50	25	25
United Kingdom	61	25	50	25
Ukraine	92	64	18	18
Switzerland	100	50	0	50
All countries	**59**	**22**	**65**	**13**

Source: own survey to operators

The share of companies that are involved in the non-GM IP soybean supply chain also differs by country. In Poland, Sweden or Austria, virtually all the companies included in the survey indicated to be operating in the non-GM market. This is also the case for the two non-EU countries included in the survey, Switzerland and Ukraine. At the other end of the spectrum, the lowest participation is observed in Spain, Netherland and Portugal. In general, an increase in the level of activities was forecasted in countries where they are already at a high level. This is notably the case for Austria, Denmark, Hungary, Sweden and Ukraine. However, in Spain and Portugal, the respondents do not expect any big change in the situation in the next five years: the activities of company in the non-GM IP soybean market are likely to remain small.

5.2 Drivers of the decision to operate or not in the non-GM IP soybean supply chain

The JRC-IPTS survey included some questions aiming at identifying the most important criteria in the decision to enter or not the non-GM IP soybean supply chain. Respondents from companies active in the non-GM IP supply chain were asked to rate a number of drivers according to the importance they had in motivating the decision to operate with non-GM IP soybean or derived products. And similarly, companies that were not dealing with non-GM IP soybean were asked to rate some factors that could explain why their company decided to stay out of the non-GM soybean markets. The results of these ratings are reported in Table 19 and Table 20.

Results from the survey show that, according to the respondents, the most important driver of the decision to start to operate in the non-GM soybean markets is the request of a downstream commercial partner. In addition, the importance of this driver increases with the proximity with retailers. This is a clear indication of the leading role of this category of actors in whole soybean supply chain: by deciding which products should be on the shelves, they commit all the actors in the supply chain that have to adapt their operations accordingly to the retailer requests. Other important drivers are the wish to upgrade the value-added of the products and to improve the brand equity of the company. These two factors are related to the corporate image and to the positioning of companies on the market. They show that the motivations of companies going to the non-GM market are primarily guided by their marketing strategy: companies want to position themselves on the high quality segment of the market, rather than just increase the sale volume or the output price. This is especially the case for the producers of animal food products, which are more exposed to the consumer choices than other categories of operator.

Interestingly, concerns about the safety or the quality of products containing GMOs are the less important drivers of the decision to operate in the non-GM soybean supply chain. This reflects the fact that operating in the non-GM soybean market is less perceived as a commitment against GMOs for safety or quality issues, rather than a way to improve the return ratio of the company. This is especially true for the operators that are the furthest away from final consumers – and from consumers' attitudes – such as the traders, the crushers and the animal feed manufacturers. However, the animal food producers are more sensitive to the safety or quality arguments when they have to decide whether to use feedstuffs containing GM or not. This sounds quite logical since their GM policy is withstanding a more intense scrutiny by consumers and other NGOs, even though there is no legal obligation to label animal products fed with industrial compounds containing GM materials. Curiously, the regulation issues on labelling and traceability is not regarded as an important element in taking the decision to operate in the non-GM soybean markets by most operators, except for producers of animal food products that are the only ones that do not have to label their product. However, this might be because these operators anticipate a possible change in the legislation, advocated by many NGOs.

For the companies that are not involved in the non-GM soybean supply chain, the most important factors of this decision are the concerns about the regular availability of non-GM IP soybean or derived product, the rather low economic benefits to expect from the non-GM products and the high segregation costs. The first element is not surprising and may be influenced by the recent temporal context of the survey. During the last months of 2013, i.e. a few months before the interviews took place, there have been reports of lack of availability of non-GM IP soybean generally due to shortage in the supply from Brazil, which have generated large increase in the premium for non-GM products. The remaining two drivers mentioned above are related to the economic aspects of

the activity, which is not perceived as beneficial. Segregation costs, for instance, can be viewed as an important deterrent at the time a company may consider investing in non-GM soybean activities, especially if they are small and do not want to specialize in non-GM only.

The liability risk related to operations in the non-GM supply chain is also an important dissuasive factor for companies, and especially for retailers. However, the legislation regarding GMOs and other issues related to the threshold for the presence of GM materials and the testing risks are among the less dissuasive elements according to the respondents, with the exception of the retailers that feel more exposed to the risks associated with the operations in the non-GM supply chain. This may be because they have less control on the production process, but are held accountable for the quality of the products they offer to consumers. Lastly, the competition in the non-GM supply chain or the possible bad relationships in this supply chain are not regarded as relevant factors to explain why these companies are not entering in these markets, or at least far less than the potential low economic benefits previously mentioned.

Table 19: Drivers of the participation in the non-GM IP soybean supply chain

	Type of operator					All operators
	Trader	Crusher	Animal feed processor	Producer of animal food product	Retailer	
Prospect of increased sale prices	4.2	2.7	3.4	5.5	n/a	4.8
Prospect of increased sale volume	4.3	3.9	3.7	5.4	n/a	4.8
Ability to move to higher value-added products	4.4	**4.8**	3.6	5.6	n/a	5.0
To satisfy the request of an upstream commercial partner	3.8	3.6	3.1	5.4	n/a	4.6
To satisfy the request of a downstream commercial partner	**4.8**	4.4	**5.7**	**6.1**	n/a	**5.7**
Concerns about the quality of the products containing GMOs	3.2	3.6	3.3	5.7	n/a	4.8
Concerns about the safety of the products containing GMOs	3.4	3.6	3.1	5.7	n/a	4.7
Regulation on labelling and traceability (to avoid GMO labelling requirements)	3.3	3.5	3.3	5.4	n/a	4.6
Need to improve brand equity and reputation of the company	3.7	4.7	3.9	5.7	n/a	5.0

Source: own survey to operators

Note: Respondents were asked to rate the different drivers in the table from 1-not important at all to 7-extremely important in their decision. Figures in bold represent the maximum in each column.

Table 20: Drivers of the non-participation in the non-GM IP soybean supply chain

	Type of operator					All operators
	Trader	Crusher	Animal feed processor	Producer of animal food product	Retailer	
Regulation complexity	2.7	3.9	3.9	3.8	5.3	3.8
Difficult to respect the threshold according to regulation	2.8	4.1	4.1	3.5	5.7	3.7
Issue of "false positive" – low reliability of testing for GM material presence	3.4	4.4	4.1	3.9	3.7	3.9
Premiums of the non-GMO soybean/meal product as inputs	4.5	4.1	4.0	4.2	4.0	4.2
High segregation costs	4.2	4.9	4.4	4.7	5.5	4.6
Regular monthly supply of non-GMO soybean/meal on the market	**4.7**	4.4	**5.4**	4.6	4.0	**4.7**
Liability risk	4.3	**5.1**	4.6	3.8	**6.0**	4.2
Low prospect of economic benefits	3.8	4.6	4.5	**4.8**	5.8	**4.7**
Potential for bad relationships with other operators in the non-GMO soybean supply chain	2.8	4.1	3.1	3.0	3.7	3.1
High competition in the non-GMO soybean markets	2.6	3.9	2.6	3.2	3.5	3.1

Source: own survey to operators

Note: Respondents were asked to rate the different items in the table from 1-not important at all to 7-extremely important in their decision. Figures in bold represent the maximum in each column.

6 Conclusions

Despite the emerging importance of the markets for non-GM IP soybean and derived products within the EU, both from an economic and consumer point of views, very little quantitative information about these markets was available until now. The volume of imports of non-GM IP soybean and soybean meal, the demand by the animal feed sector and by EU Member States, as well as the price premium for non-GM soybean meal were not known precisely. To this extent, the report represents the first attempt to fill this gap by providing original and unpublished data on the EU supply chain for non-GM IP soybean products.

The report is based on a comprehensive study of the functioning of the markets for non-GM IP soybean and derived products in the EU in 2013/2014. This study collected market information about the size of the non-GM markets for soybean and different products derived of soybean, as well as on the price premium and cost transmission within the supply chain. In addition, a survey to about 350 operators in the EU soybean supply chain was conducted, in order to obtain the data from the most reliable source available, i.e. directly from the companies operating in the GM and non-GM supply chain. This aspect is important since very little information about the markets for GM or non-GM soybean is available in official statistics. In sum, the report represents an important step towards the better knowledge of the non-GM soybean markets in the EU, whose annual value at import price is close to EUR 1.5 billion.

The report provides a snapshot of the situation of the supply chain for non-GM IP soybean and derived products in 2012/2013 and intends to give an insight of its likely evolution. With an estimate of 10% of the imports of soybean meal equivalent that are non-GM IP, it confirms that these products are more than a niche market. A closer look show that the situation is very mixed depending on the countries considered: in some countries, the demand for non-GM IP soybean is virtually inexistent (e.g. Belgium, the Netherlands, Portugal and Spain) while at the other extreme some countries demand almost exclusively non-GM IP soybean (Hungary and Sweden).

While the majority of the companies involved in these markets do not consider further expansion in the near future, they are also confident that they will keep their overall market share. At operator's level in the supply chain, the tendency is to specialise either the whole company or some of its production plants, in order to reduce the segregation costs. However, the future evolution of non-GM soybean markets at the medium-long term is difficult to predict since it depends on various factors. First, it is worth mentioning that within the supply chain, the decision-making power is generally wielded by few actors, mainly belonging to the retail sector. They decide which food products will be placed on the shelves and which production standards they will have (e.g. whether food products from "animals fed with non-GM feed" will be offered or not). Yet retailers' decision on keeping this product line is not based just on economic gains. Other considerations are equally important, such as consumers' opinion, or the opinion of social and environmental organisations.

Another important aspect in the decisions of gatekeepers is the situation regarding the supply of non-GM IP soybean, principally in Brazil. The availability of non-GM IP soybean on

international markets, and by consequence its price premium, are followed closely. The price premium for non-GM IP soybean is certainly diluted by other costs in the final production cost of animal food products: our results have shown that for poultry meat, a price premium of 30% for non-GM IP soybean roughly results in a 10% increase of producer price. However, products such as poultry meat are leader products for retailers, supposed to draw consumers into the stores, a segment where the price competition is fierce. Therefore in the last years when premiums for non-GM IP soybean have been very high, some retailers have stopped offering "non-GM fed" poultry in their supermarkets.

Securing a supply of non-GM IP soybean at a reasonable price for the EU in the future will therefore require the development of efficient segregation systems in the Centre-West regions of Brazil where most of the non-GM soybean is grown, to make sure that it is channelled to the EU in a cost-effective manner. In addition, EU importers of non-GM soybean and soybean meal are currently trying to diversify their source of supply to reduce their dependence towards Brazil. One of the possible new sources is India, provided some quality issues could be solved. The Indian option is particularly of interest for the EU since the harvest season in this country starts in September, at the moment when Brazilian stocks are generally getting lower, pulling up the price of soybean. Therefore, this could also solve the issue of the supply seasonality of Brazilian soybean. But these aspects regarding the supply of non-GM soybean needs to be further investigated in order to complement the picture this reports has started to lay out by focusing on the EU soybean supply chain.

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8 Annex: the survey questionnaire

The questionnaire that follows was designed for the survey of companies involved either in the soybean trading, the soybean crushing or the production of industrial compound feed with soybean. It was completed by face-to-face interviews with key responsible for the companies. Another questionnaire (not reproduced here) was designed for producer of animal food products and retailers and was completed by mean of CATIs (Computer Assisted Telephone Interviews). This second questionnaire was shorter.

QUESTIONNAIRE FOR THE SUPPLY CHAIN – TRADERS, CRUSHER/REFINERS AND PROCESSORS
16 April 2014 V15

Survey ID: (Country Name)	Survey Completion Date:	Company Name:

INTRODUCTION

Thank you for agreeing to participate in this important research. This research is commissioned by _____. The main purpose for this research is to get a clearer picture of past events and current situation of the markets for soybean non-GMO and GM soybeans traded in the EU. Information you provide will help us to better understand the current functioning and governance of non-GMO soybean markets in the EU as well as build predictive tools to anticipate future needs.

This study is commissioned strictly as research so no sales of any kind are involved. We encourage you to be candid and honest. Your responses during this interview are completely confidential. To get started I'd like to ask a few basic questions and then we can get into more detail about the issues surrounding non-GMO soybean markets and GM soybean markets.

COMPANY INFORMATION [ASK SECTION QUESTIONS (Q1-Q17) FOR ALL RESPONDENTS]

SCREEN

Q1. First, does your business use soybeans or soybean derived products in its operations? By soybeans or soybean derived products we are referring to beans, meal, pellets, and or oil.

1. Yes
2. No [THANK & TERMINATE]

999. Don't Know [THANK & TERMINATE]

888. Refused [THANK & TERMINATE]

Q2. In which EU Member State are you located?

Q3. Which EU Member State(s) are you responsible for? Please bear in mind that this area should be considered the reference for the rest of the questionnaire

	Q2 [SELECT ONE]	Q3 [SELECT ALL THAT APPLY]
Austria	1	1
Belgium	2	2
Bulgaria	3	3
Croatia	4	4
Cyprus	5	5
Czech Republic	6	6
Denmark	7	7
Estonia	8	8
Finland	9	9
France	10	10
Germany	11	11
Greece	12	12
Hungary	13	13
Ireland	14	14

Italy	15	15
Latvia	16	16
Lithuania	17	17
Luxembourg	18	18
Malta	19	19
Netherlands	20	20
Poland	21	21
Portugal	22	22
Romania	23	23
Slovakia	24	24
Slovenia	25	25
Spain	26	26
Sweden	27	27
United Kingdom	28	28
Don't know	999	999
Refused	888	888

[MUST BE RESPONSIBLE FOR EU MEMBER STATES PER Q3 TO CONTINUE; OTHERWISE THANK & TERMINATE]

Q4. Please indicate in which subsector(s) of the soybean supply chain your company is active. **[READ LIST]**

Q5. Now indicate the primary subsector for which you are responsible? Please bear in mind that for the rest of the questionnaire this subsector should be considered the reference.

	Q4 All Subsectors **[SELECT ALL THAT APPLY]**	Q5 Your Responsibility **[SELECT ONE]**
Import and/or trading	1	1
Crusher and/or refiner	2	2
Feed manufacturer/Processor	3	3
Producer of animal product	4	4
Retail	5	5
[DO NOT READ] Don't know	999	999
[DO NOT READ] Refused	888	888

[Q4 MUST BE 1 (IMPORT AND TRADING) OR 2 (CRUSHER/REFINER) OR 3 (FEED MANUFACTURER TO CONTINUE; OTHERWISE THANK & TERMINATE]

Q6. Which of the following best describes this company? [READ LIST]

1. Privately owned
2. Enterprise or publicly traded corporation
3. Cooperative
4. Other [SPECIFY] _____

999. [DO NOT READ] Don't know

888. [DO NOT READ] Refused

Q6A. **[For Crushers and Feed Manufacturers only]** How many of your company plants are you representing?

1. Name of Plant

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2. Name of Plant

---

3. Name of Plant

---

4 Name of Plant

SOYBEAN MARKET SECTOR

[READ] For the rest of the questionnaire, we will focus solely on the primary activity and country for which you are responsible. Specifically, we are interested in the company's [INSERT Q5 subsector] activity in [INSERT Q3 country] as it pertains to soybeans and soybean derived products. Recall, soybean and soybean derived products include beans, meal and feedstuffs, including pellets, and oil.

Q7. [ASK ONLY IF Q4=1 (IMPORTING/TRADING] What is the primary soybean related product traded by your company? [SELECT ONLY ONE]

1. Soybeans
2. Soybean meal
3. Soybean oil
4. Feed containing soybean
5. Pellets
6. Other [SPECIFY]

Q8. How many years has your company been active in [INSERT Q5] soybeans and or soybean derived products?

_____ Years

999 Don't know

888 Refused

Q9. **There is no Q9**

Q10. Currently, does your company operate in the Non-GMO soybean supply chain?

1. Yes - **CONTINUE TO Q17 THEN ASK Q18-Q44**
2. No – **CONTINUE TO Q17 THEN ASK Q45-Q47**

999. Don't know – **CONTINUE TO Q17**

888. Refused - **CONTINUE TO Q17**

IF Q10 = NO- SKIP Q11

Q11. What percentage of the soybean and or soybean derived products **used, traded or purchased** by your company is non-GMO ?

	Q16 (Used/Traded)
% Non-GMO	%
Don't know	999
Refused	888

IF Q11 IS LESS THAN 10% USE THE GM SOYBEAN SURVEY QUESTIONS

Q12. And 5 years ago, did your company operate in the Non- GMO soybean supply chain?

1. Yes
2. No

999. Don't know

888. Refused

Q13. What would you say is the likely evolution of your activities in Non GMO soybean in the next 5 years?

1. Our activities in Non-GMO soybeans are likely to increase
2. Our activities in Non-GMO soybeans are likely to remain steady
3. Our activities in Non-GMO soybeans are likely to decrease 999. Don't know

888. Refused

Q14. Currently, does your company operate in the GM soybean supply chain?

1. Yes - **CONTINUE TO Q17 THEN ASK Q48 – Q56**
2. No - **CONTINUE TO Q17 THEN ASK Q57 – Q66**

999. Don't know - **CONTINUE TO Q17**

888. Refused - **CONTINUE TO Q17**

Q15. And 5 years ago, did your company operate in the GM soybean supply chain?

1. Yes
2. No

999. Don't know

888. Refused

Q16. What would you say is the likely evolution of your activities in GM soybean in the next 5 years?

1. Our activities in GM soybeans are likely to increase
2. Our activities in GM soybeans are likely to remain steady
3. Our activities in GM soybeans are likely to decrease **[NOT A POSSIBLE CHOICE IF Q11=2]**

999. Don't know

888. Refused

Q17. In the area for which you are responsible, what was the total **volume** purchased of [INSERT a-e] in 2013? Please specify volume in metric tonnes.

	Q17 (Volume)
a) Soybeans	
b) Soybean meal	
c) Feed containing soybeans	
d) Soybean oil	
e) Pellets	
Don't know	999
Refused	888

Survey Instructions

Survey file = Questionnaire Soy Crusher Trader Processor V12 Short Revised

INSTRUCTION NOTE: IF Q10 = YES - ASK Q18 - Q44 THEN GO TO Q57. IF Q10 = NO – ASK Q45 – 47. IF Q14 = YES - ASK Q 48 – 56 THEN GO TO Q57. IF Q14 = NO GO TO Q57.

Survey questions depend solely on responses to Q10 and Q14	Q10 – Operate in Non-GMO Supply Chain?	
Q14 – Operate in GM Supply Chain?	Yes	No/DK
Yes	(Q's1-17, 18-44,57-66) ONLY	(Q's1-17,45-47, 48-56,57-66) ONLY
No/DK	(Q's1-17, 18-44,57-66) ONLY	TERMINATE

ACTIVITY IN NON-GMO SOYBEAN MARKET [ASK SECTION QUESTIONS (Q18-Q44) ONLY IF Q10=1 (YES)]

[READ] For the following questions we would like you to focus solely on your company's [INSERT Q5] activities in the **non-GMO soybean market, specifically**. Let's start with a few questions about the costs and benefits of operating in the non-GMO market.

COSTS & BENEFITS

Q18. What is your preferred currency for values?

1. Euros
2. Pounds
3. Other [SPECIFY] _____

[READ] For the remainder of this interview, please refer to this currency for the any and all questions that refer to cost or monetary values.

THERE IS NO Q19, Q20, Q21.

REFERENCE GRID 1: IF Q5=1 (IMPORTER/TRADER] INSERT Q7 RESPONSE IF Q5=2 (CRUSHER/REFINER] INSERT "SOYBEANS" IF Q5=3 (FEED MANUFACTURER) INSERT "SOYBEAN MEAL"

Q22. Do you use a threshold of .1% for the presence of GM material in your non-GMO [INSERT REFERENCE GRID 1 RESULT]?

1. Yes
2. No [SKIP TO Q26]

999. Don't know [SKIP TO Q26]
888. Refused [SKIP TO Q26]

Q23. What is the percent of [INSERT REFERENCE GRID 1 RESULT] you use or purchase with a .1% allowed threshold?

Q24. What is the actual price per tonne in [INSERT Q18] you pay for the non-GMO [INSERT REFERENCE GRID 1 RESULT] with a .1% threshold?

Q25. What is the **additional** price per tonne in [INSERT Q18] for the non-GMO [INSERT REFERENCE GRID 1 RESULT] corresponding to the .1% threshold compared to its GM counterpart?

	Q23 (% Purchased) %	Q24 (Actual Cost) / tonne	Q25 (Additional Cost) / tonne
No additional cost			0
Don't know	999	999	999
Refused	888	888	888

Q26. Do you use a threshold of .9% for the presence of GM material in your non-GMO [INSERT REFERENCE GRID 1 RESULT]?

1. Yes

2. No **[SKIP TO Q30]**
999. Don't know **[SKIP TO Q30]**
888. Refused **[SKIP TO Q30]**

Q27. What is the percent of **[INSERT REFERENCE GRID 1 RESULT]** you use or purchase with a .9% allowed threshold?

Q28. What is the actual price per tonne in **[INSERT Q18]** you pay for the Non-GMO **[INSERT REFERENCE GRID 1 RESULT]** with a .9% allowed threshold?

Q29. What is the **additional** price per tonne in **[INSERT Q18]** for the Non-GMO **[INSERT REFERENCE GRID 1 RESULT]** corresponding to the .9% allowed threshold compared to its GM counterpart?

	Q27 (% Purchased) %	Q28 (Actual Cost) / tonne	Q29 (Additional Cost) / tonne
No additional cost			0
Don't know	999	999	999
Refused	888	888	888

Q30. Does your company have any insurance contracted against the risk of contamination by GM material of non-GMO soybean or soybean derived products?

1. Yes
2. No
999. Don't know
888. Refused

DECISION TO ENTER THE NON-GMO SOYBEAN SUPPLY CHAIN

[READ] Still thinking about your company's **[INSERT Q6]** activities in **[INSERT Q3]**, the next questions address your company's decision to enter the **non-GMO market**. Please keep this in mind as I ask the following questions.

Q31. Please rate the following factors according to the importance they had in the decision of your company, in your opinion, to operate in the non-GMO markets at the moment the decision was taken. Use a 7-point scale where ***1 is not at all important*** and ***7 is extremely important*.**

[ROTATE LIST]	**Not at all**						**Extremely**	**Don't know**	**Refused**
a) Prospect of increased sale prices	1	2	3	4	5	6	7	999	888
b) Prospect of increased sale volume	1	2	3	4	5	6	7	999	888
c) Ability to move to higher value-added products	1	2	3	4	5	6	7	999	888
d) To satisfy the request of an upstream commercial partner	1	2	3	4	5	6	7	999	888
e) To satisfy the request of a downstream commercial partner	1	2	3	4	**5**	**6**	**7**	999	888
f) Concerns about the quality of the	1	2	3	4	5	6	7	999	888

	products containing GMOs									
g)	Concerns about the safety of the products containing GMOs	1	2	3	4	5	6	7	999	888
h)	Regulation on labelling and traceability (to avoid GMO labelling requirements)	1	2	3	4	5	6	7	999	888
i)	Need to improve brand equity and reputation of the company	1	2	3	4	5	6	7	999	888

Q32. [ASK ONLY IF Q31E = 5-7] You indicated that satisfying the request of a downstream partner was important in your company's decision to operate in the non-GMO soybean markets. Specifically, which downstream partner or partners were important? [READ LIST; ACCEPT MULTIPLE RESPONSES]

1. Feed manufacturer
2. Animal product producer
3. Retailer
4. Final consumers
5. Other [SPECIFY]_____

999. Don't know
888. Refused

Q33. At the time your company was contemplating whether or not to operate in the non-GMO market,in your opinion how important were the following factors when deciding whether or not to operate in the non-GMO soybean market. Use a 7-point scale where ***1 is not at all important*** and ***7 is extremely important*.**

[ROTATE LIST]	Not at all						Extremely	Don't know	Refused
a) Regulation complexity	1	2	3	4	5	6	7	999	888
b) Difficult to respect the threshold according to regulation	1	2	3	4	5	6	7	999	888
c) Issue of "false positive" – low reliability of testing for GM material presence	1	2	3	4	5	6	7	999	888
d) Premiums of the non-GMO soybean/meal product as inputs	1	2	3	4	5	6	7	999	888
e) High segregation costs	1	2	3	4	5	6	7	999	888
f) Regular monthly supply of non-GMO soybean/meal available on the market	1	2	3	4	5	6	7	999	888
g) Liability risk	1	2	3	4	5	6	7	999	888
h) Low prospect of economic benefits	1	2	3	4	5	6	7	999	888
i) Potential for bad relationships with other operators in the non-GMO soybean supply chain	1	2	3	4	5	6	7	999	888
j) High competition in the non-GMO soybean markets	1	2	3	4	5	6	7	999	888

RELATIONSHIPS IN NON-GMO SOYBEAN SUPPLY CHAIN

[READ] Again, thinking about your company's [INSERT Q4] activities in the **non-GMO soybean market** in [INSERT Q3], the following questions ask about the types of relationships that exist specifically in the non-GMO soybean supply chain.

Q34. Does your company have transactions or relationships with commercial partners in the following sectors?

[READ LIST]

Q35. Which one of the following is your most important **type of supplier** for your activities involving non-GMO soybean or soybean derived products. By *most important* we mean the relationship that is most valuable to you in terms of current volume and future development potential. [READ LIST SELECTED PER Q34]

Q36. Now indicate your most important **type of buyer** for your activities involving non-GMO soybean or soybean derived products. [READ LIST SELECTED PER Q34]

	Q34 Relationships in this sector [SELECT ALL THAT APPLY]	Q35 Type of supplier [SELECT ONE]	Q36 Type of buyer [SELECT ONE]
a) Soybean crop farmers	1	1	1
b) Cooperative of soybean farmers	2	2	2
c) Soybean exporters	3	3	3
d) Main office in country of soybean origin	4	4	4
e) Soybean importer	5	5	5
f) Crusher	6	6	6
g) Feed manufacturer	7	7	7
h) Animal products producer	8	8	8
i) Livestock farmers	9	9	9
j) Large integrated processors	10	10	10
k) Animal product processor	11	11	11
l) Retailers	12	12	12
m) Other [SPECIFY]_____	13	13	13
[DO NOT READ] Don't know	999	999	999
[DO NOT READ] Refused	888	888	888

Q37. [SKIP IF Q35=888 OR 999 (DON'T KNOW/REFUSE)] For the following attributes, please rate the relationship with your [INSERT Q35] for your activities involving non-GMO soybean or derived products. Use a scale from 1 to 7 to describe the relationship where ***1 is very poor*** and ***7 is very good***.

Q38. [SKIP IF Q36=888 OR 999 (DON'T KNOW/REFUSE)]This time rate the relationship with your [INSERT Q36] for your activities involving non-GMO soybean or derived products on a scale from 1 to 7 where ***1 is very poor and 7 is very good***. [USE SAME ROTATION IN Q39]

[ROTATE LIST]	Q37 (Supplier) Very Poor						Very Good	Don't know	Refuse	Q39 (Buyer) Very Poor						Very Good	Don't know	Refuse
a) Our effectiveness in resolving potential or emerging conflicts with suppliers/buyers	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
b) Our joint strategic decisions with suppliers/buyers (e.g. info system, labelling, production capacity…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
c) Our joint organizational decisions with suppliers/buyers (e.g. review of processes, employees tasks…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
d) Our joint operational decisions with suppliers/buyers (e.g. deliveries, everyday type of management…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888

Q39. What percentage of **purchases** from your [INSERT Q35] is in each of the following categories for its operations specifically in the non-GMO soybean markets? [READ LIST A-D; DON'T KNOW=999; REFUSE=888]

Definitions:

- ***Spot market****: Immediate exchange of goods at current prices. The identities of the business partners are largely irrelevant.*
- ***Forward contracts:*** *Legally enforceable contract which defines all or part or each party's obligations; can be short – or long-term.*
- ***Financial participation*** *(e.g. joint ventures, franchises): Shared ownership of production processing or distribution assets with your suppliers/buyers, but parties remain legally independent.*

Q40. Has this increased, decreased or stayed the same in the last five years?

	Q39	Q40				
		Increased	Decreased	Same	Don't know	Refuse
a) Spot market	%	1	2	3	999	888
b) Forward contracts	%	1	2	3	999	888
c) Financial participation	%	1	2	3	999	888
d) Other, specify:_____	%	1	2	3	999	888
	[MUST ADD TO 100 %]					

Q41. Please indicate what percentage of **sales** to [INSERT Q36] your company currently has in each of the following categories for its operations specifically in the non-GMO soybean markets? [READ LIST A-D; DON'T KNOW=999; REFUSE=888]

Q42. Has this increased, decreased or stayed the same in the last five years?

	Q45	Q46				
		Increased	Decreased	Same	Don't know	Refuse
a) Spot market	%	1	2	3	999	888
b) Forward contracts	%	1	2	3	999	888
c) Financial participation	%	1	2	3	999	888
d) Other, specify:_____	%	1	2	3	999	888
	[MUST ADD TO 100 %]					

Q43. Please rate your agreement or disagreement with the following statements using a 7-point scale where ***1 is fully disagree with the statement*** and ***7 is fully agree with the statement***.

[READ BEFORE EACH STATEMENT] ***Compared to contracts for other soybean products, the contract we have in place for non-GMO soybean products ....***

[ROTATE LIST]	Fully Disagree						Fully Agree	Don't know	Refuse
a) Is a new type of contract. Those already existing with our partners were not suitable	1	2	3	4	5	6	7	999	888
b) Helps to increase our knowledge of the product characteristics, of the supply chain, and of the suppliers or buyers.	1	2	3	4	5	6	7	999	888

Q44. Again, please rate your agreement or disagreement with the following statements using a 7-point scale where ***1 is fully disagree with the statement*** and ***7 is fully agree with the statement***.

[READ BEFORE EACH STATEMENT] ***When introducing the non-GMO activity our company needed to...***

[ROTATE LIST]	Fully Disagree						Fully Agree	Don't know	Refuse
a) Invest in a specific information system with suppliers/buyers to ensure the non-GM quality.	1	2	3	4	5	6	7	999	888
b) (ASK ONLY IF Q44a = 5-7) The above investments where jointly made with the supplier/buyers	1	2	3	4	5	6	7	999	888
c) Invest into a specific equipment or material, to meet the non-GM requirements or to exchange with suppliers/buyers	1	2	3	4	5	6	7	999	888
d) (ASK ONLY IF Q44c = 5-7) The above investments where jointly made with the suppliers/buyers	1	2	3	4	5	6	7	999	888
e) Invest into specific buildings or plants, to meet the non-GM requirements or to exchange with suppliers/buyers	1	2	3	4	5	6	7	999	888
f) (ASK ONLY IF Q44e = 5-7) Redeploying the above investment building to other activities would be costly	1	2	3	4	5	6	7	999	888

[SCALE REMINDER; READ BEFORE EACH STATEMENT] ***When managing the non-GMO activity our company has to...***

[ROTATE LIST]	Fully Disagree						Fully Agree	Don't know	Refuse
g) Invest time and efforts with buyers/suppliers to ensure the non-GM quality	1	2	3	4	5	6	7	999	888
h) (ASK ONLY IF Q44g = 5-7) The learnings from the above time and effort can be easily redeployed to others buyers/suppliers	1	2	3	4	5	6	7	999	888
i) Invest in tailored training activities to ensure the non-GM quality requirements or to exchange with suppliers/buyers	1	2	3	4	5	6	7	999	888

[READ BEFORE EACH STATEMENT] ***When supplying / delivering non-GMO products....***

[ROTATE LIST]	Fully Disagree						Fully Agree	Don't know	Refuse
j) In case of non-compliance, it is easy to assess the responsibility of the suppliers/buyers	1	2	3	4	5	6	7	999	888
k) It easy to find another supplier/buyer of non-GM products and replace the existing ones	1	2	3	4	5	6	7	999	888
l) In case of changes of market prices it is easy to readjust commitments with suppliers/buyers	1	2	3	4	5	6	7	999	888

INACTIVITY IN NON-GMO SOYBEAN MARKET [ASK SECTION QUESTIONS (Q45-Q47) ONLY IF Q10 = 2(NO)]

[READ] Now I'd like you to focus solely on your company's decision **not** to operate in the non-GMO soybean supply chain/markets. Please keep this in mind as I ask the following questions.

Q45. Please rate the following factors according to the importance they could potentially have to convince your company to operate in the non-GMO markets? Please use a 7-point scale where ***1 is not at all important*** and ***7 is extremely important***.

[ROTATE LIST]	Not at all						Extremely	Don't know	Refuse
a) Prospect of increased sale prices	1	2	3	4	5	6	7	999	888
b) Prospect of increased sale volume	1	2	3	4	5	6	7	999	
c) Ability to move to higher value-added products	1	2	3	4	5	6	7	999	888
d) To satisfy the request of an upstream commercial partner	1	2	3	4	5	6	7	999	888
e) To satisfy the request of an downstream commercial partner	1	2	3	4	5	6	7	999	888
f) Concerns about the quality of the products containing GMOs	1	2	3	4	5	6	7	999	888
g) Concerns about the safety of the products containing GMOs	1	2	3	4	5	6	7	999	888
h) Regulation on labelling and traceability (to avoid GMOs labelling requirements)	1	2	3	4	5	6	7	999	888
i) Need to improve brand equity and reputation of our company	1	2	3	4	5	6	7	999	888

Q46. THERE IS NO Q46

Q47. Please rate the following factors according to the importance they have in the decision of your company to **stay out** of non-GMO markets. Use a 7-point scale where ***1 is not at all important*** and ***7 is extremely important***.

[ROTATE LIST]	Not at all						Extremely	Don't know	Refuse
a) Regulation complexity	1	2	3	4	5	6	7	999	888
b) Difficult to respect the threshold according to regulation	1	2	3	4	5	6	7	999	888
c) Issue of "false positive" – low reliability of testing for GM material presence	1	2	3	4	5	6	7	999	888
d) Premiums of the non-GMO soybean/meal product as inputs	1	2	3	4	5	6	7	999	888
e) High segregation costs	1	2	3	4	5	6	7	999	888
f) Regular monthly supply of non-GMO soybean/meal on the market	1	2	3	4	5	6	7	999	888
g) Liability risk	1	2	3	4	5	6	7	999	888
h) Low prospect of economic benefits	1	2	3	4	5	6	7	999	888
i) Potential for bad relationships with other operators in the non-GMO soybean supply chain	1	2	3	4	5	6	7	999	888
j) High competition in the non-GMO soybean markets	1	2	3	4	5	6	7	999	888

ACTIVITY IN GM SOYBEAN MARKET [ASK SECTION QUESTIONS (Q48-Q56) ONLY IF Q10 = NO AND Q13 = 1 (YES)]

[READ] Now I'd like you to focus solely on your company's [INSERT Q7] activity in the **GM soybean market** in [INSERT Q4]. The next questions ask about the types of relationships that exist in the GM soybean supply chain.

Q48. Does your company have transactions or relationships with commercial partners in the following sectors?
[READ LIST]

Q49. Which one of the following is your most important **type of supplier** for your activities involving **GM soybean** or soybean derived products. By *most important* we mean the relationship which is most valuable to you in terms of current volume. [READ LIST SELECTED PER Q48]

Q50. Which one of the following is your most important **type of buyer** for your activities involving **GM soybean** or soybean derived products. [READ LIST SELECTED PER Q48]

SECTORS	Q48 Relationships in this sector [SELECT ALL THAT APPLY]	Q49 Type of supplier [SELECT ONE]	Q50 Type of buyer [SELECT ONE]
Soybean crop farmers	1	1	1
Cooperative of farmers	2	2	2
Soybean exporters	3	3	3
Main office in country of soybean origin	4	4	4
Soybean importer	5	5	5
Crusher	6	6	6
Feed manufacturer	7	7	7
Animal products producer	8	8	8
Livestock farmers	9	9	9
Large integrated processors	10	10	10
Animal product processor	11	11	11
Retailers	12	12	12
Other [SPECIFY]_____	13	13	13
[DO NOT READ] Don't know	999	999	999
[DO NOT READ] Refused	888	888	888

Q51. [SKIP IF Q49=888 OR 999 (DON'T KNOW/REFUSE)]For the following attributes, please rate the relationship with your [INSERT Q49] for your activities involving GM soybean or derived products. Use a scale from 1 to 7 to describe the relationship where ***1 is very poor*** and ***7 is very good***.

Q52. [SKIP IF Q50=888 OR 999 (DON'T KNOW/REFUSE)]This time rate the relationship with your [INSERT Q50] for your activities involving GM soybean or derived products on a scale from 1 to 7 where ***1 is very poor and 7 is very good***.
[USE SAME ROTATION IN Q54]

[ROTATE LIST]	Q51 (Supplier) Very Poor						Very Good	Don't know	Refuse	Q52 (Buyer) Very Poor						Very Good	Don't know	Refuse
a) Our effectiveness in resolving potential or emerging conflicts with suppliers/	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
b) Our joint strategic decisions with suppliers/buyers (e.g. info system, labeling, production capacity…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
c) Our joint organizational decisions with suppliers/buyers (e.g. review of processes, employees tasks…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888
d) Our joint operational decisions with suppliers/buyers (e.g. deliveries, everyday type of management…)	1	2	3	4	5	6	7	999	888	1	2	3	4	5	6	7	999	888

Q53. Please indicate what percentage of purchases from **[INSERT Q49]** your company currently has in each of the following categories for its operations specifically in the GM soybean markets? **[READ LIST A-D]**

Definitions:

- ***Spot market****: Immediate exchange of goods at current prices. The identities of the business partners are largely irrelevant.*
- ***Forward contracts:*** *Legally enforceable contract which defines all or part or each party's obligations; can be short – or long-term.*
- ***Financial participation*** *(e.g. joint ventures, franchises): Shared ownership of production processing or distribution assets with your suppliers/buyers, but parties remain legally independent.*

Q54. Has this increased, decreased or stayed the same in the last five years?

	Q53	Q54				
		Increased	Decreased	Same	Don't know	Refuse
a) Spot market	%	1	2	3	999	888
b) Forward contracts	%	1	2	3	999	888
c) Financial participation	%	1	2	3	999	888
d) Other, specify:_____	%	1	2	3	999	888
	[Must add to 100 %]					

Q55. Please indicate what percentage of sales to **[INSERT Q50]** your company currently has in each of the following categories for its operations in the GM soybean markets?

Q56. Has this increased, decreased or stayed the same in the last five years?

	Q61	Q62				
		Increased	Decreased	Same	Don't know	Refuse
a) Spot market	%	1	2	3	999	888
b) Forward contracts	%	1	2	3	999	888
c) Financial participation	%	1	2	3	999	888
d) Other, specify:_____	%	1	2	3	999	888
	[Must add to 100 %]					

GENERAL ATTITITUDES [ASK SECTION QUESTIONS (Q57-Q59) FOR ALL RESPONDENTS]

[READ] The next questions are about perceptions among companies about the soybean supply chain and the soybean market in general. There are no right or wrong answers, so please be candid in your responses.

COMPANY STRATEGY

Q57. In your country, what is the approximate percentage of Non-GMO soybeans or soybean derived products that are consumed by the following sectors…? READ LIST

a) Beef	_____%
b) Dairy	_____%
c) Pork	_____%
d) Poultry	_____%
e) Other	_____%
f) Don't'Know	_____%

Q58. How well do the following statements describe the general strategy of your company? Rate each statement using a 7-point scale where *1 is does at all not describe our company* and *7is describes our company completely*.

[ROTATE LIST]	Not at all						Completely	Don't know	Refuse
a) Our company tries to remain as independent as possible	1	2	3	4	5	6	7	999	888
b) Our company operates in very uncertain markets	1	2	3	4	5	6	7	999	888
c) Our company operates in a market where above-average product quality is important	1	2	3	4	5	6	7	999	888
d) Our company is subject to strong competition in its sales markets	1	2	3	4	5	6	7	999	888

ATTITUDES, PERCEPTIONS & KNOWLEDGE OF GATEKEEPERS

Q59. Please rate the following statements according to your personal view using a 7-point scale where ***1 is fully disagree with the statement*** and ***7 is fully agree with the statement***.

THIS QUESTION NEEDS TO BE DISCUSSED

[ROTATE LIST]	Fully Disagree						Fully Agree	Don't know	Refuse
a) When humans interfere with nature, disastrous consequences result	1	2	3	4	5	6	7	999	888
b) Among the risks we face in our live, those impacting food safety are very important	1	2	3	4	5	6	7	999	888
c) GM crops are the future of agriculture	1	2	3	4	5	6	7	999	888
d) GM crops are harmful to the environment or are likely to become harmful in the distant future	1	2	3	4	5	6	7	999	888
e) The possibility that new allergens could arise from the GM product is a concern to my company	1	2	3	4	5	6	7	999	888
f) There is a risk of cross contamination between GM plants and native species	1	2	3	4	5	6	7	999	888
g) If the majority of European consumers are in favor of GM crops they should be approved for cultivation	1	2	3	4	5	6	7	999	888
h) If farmers think that a GM crop is useful to them they should be allowed to use it	1	2	3	4	5	6	7	999	888
i) The regulations on the placing on market and labeling of food containing GM materials are adapted to the needs and wishes of consumers	1	2	3	4	5	6	7	999	888
j) The regulations on the placing on market and labeling of food containing GM materials are adapted to the needs and wishes of the operators in the soybean supply chain	1	2	3	4	5	6	7	999	888

INFORMATION ABOUT RESPONDENT [ASK SECTION QUESTIONS (Q60-Q65) FOR ALL RESPONDENTS]

[READ] The final questions will be used for classification purposes.

Q60. How many full-time employees (including full-time equivalents of part-time employees) did your company have in 2013?

_____ Employees
999 Don't know
888 Refused

Q61. Please indicate your position at this company:

1. Owner
2. Executive
3. Line manager
4. Purchaser
5. Trader
6. Other [SPECIFY] _____

Q62. How long have you occupied this position?

_____ Years
999 Don't know
888 Refused

Q63. What of the following categories best describes your age?

1. 18-24 years
2. 25-34 years
3. 35-44 years
4. 45-54 years
5. 55-64 years
6. 65 or more years
7. Refused

Q64. [DO NOT READ] Record gender?

1. Male
2. Female

Q65. General comment or suggestion concerning the survey (open field question)

THANK AND TERMINATE INTERVIEW

European Commission
EUR 27203 EN – Joint Research Centre – Institute for Prospective Technological Studies

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