Required Report - public distribution

Date: 6/15/2015

GAIN Report Number: FR9172

France

Agricultural Biotechnology Annual

2015

Approved By:
David G. Salmon
Prepared By:
FAS Paris

Report Highlights:
Although public opinion in France is generally opposed to products derived from biotechnology, the livestock industry is dependent upon imported genetically engineered (GE) soy and soy meal to meet their feed demands. France has no commercial production or field trials of GE crops, but some laboratory research is being conducted in the country.

Executive Summary

Despite difficulties in conducting their work, basic and applied research in plant and animal biotechnology by French research institutions continues, as well as involvement in a variety of international programs. No genetic engineering field trials are being carried out in France, due to previous destruction of test plots by activists. Some institutions develop partnerships in order to conduct field experiments in other countries.

France does not produce any agricultural goods derived from biotechnology for commercial purposes. The only genetically engineered (GE) plant approved for cultivation in the EU currently is a Bt corn, and, since 2008, its cultivation has been banned in France. However, the country imports GE feed, mainly soybeans and soybean meal. Non-GE soybean production remains marginal relative to imports but it is expected to increase in the coming years (see Part A, section d).

France's agricultural biotechnology policies are part of the European Union's (EU) policy and regulatory framework. National legislation is more restrictive than EU legislation and includes a compulsory field register for GE crop fields and voluntary non-biotech labeling on food products. The government is opposed to using biotechnology in animal breeding, due to ethical and animal welfare concerns.

In March 2015, with the support of the French Government, the EU released a directive that allows member states to restrict or ban the cultivation of EU-authorized GE plants in their territory for reasons other than risks to human health, animal health or the environment. In France, both biotech advocates and biotech opponents criticize this move towards the nationalization of a common EU policy that is contrary to the spirit of the single market.

In April 2015, the European Commission issued a proposal for a regulation that would allow member states to restrict or ban the use of EU-authorized GE crops or products in their territory, again for reasons other than risks to health or the environment. This text needs to be debated by the European Parliament and the Council of the European Union before it is adopted, which could take years. This proposal meets with unanimous opposition. The Government of France does not want to be placed in the very uncomfortable position of facing great pressure to ban the use of GE products from anti-biotech groups, knowing that a ban would be devastating to the already stressed French livestock and poultry sectors. Anti-biotech activists criticize the proposal too, saying that member states that want to ban the use of GE products would be unable to find justifications compatible with the EU legislation and the international obligations of the EU.

In March 2015, the European Patent Office ruled that plants or seeds obtained through conventional breeding methods were patentable. The French seed industry deplores this decision. They advocate that patents should only be allowed for biotechnological inventions.

Overall, agricultural biotechnology is a very sensitive and controversial subject in France. Consumers who mainly hear from extreme pro and con sources say they are "worried" about it. There is better acceptance among grain producers, animal feed compounders, and scientists. The dynamic of the debate has changed insofar as government officials now differentiate between what they call "first generation"

biotech plants (herbicide and insect resistant crops), which they oppose, and "second generation" biotech plants that "bring consumer or environmental benefits" (enhanced nutritional content, reduced nitrogen use, improved water efficiency), which they say they support.

In addition, there is an emerging debate on New Plant Breeding Techniques (NBTs), with GE opponents declaring that plants produced through these techniques should be legally considered as GE crops under the EU framework.

Acronyms used in this report are the following:

ANSES	Agency for Food, Environmental and Occupational Health and Safety
CEA	Atomic Energy and Alternative Energies Commission
CIRAD	French Agricultural Research Centre for International Development
CNRS	National Center for Science Research
DDGS	Distillers' Dried Grains and Solubles
EFSA	European Food Safety Authority
EU	European Union
GE	Genetically Engineered
HCB	High Council for Biotechnology
INRA	French National Institute for Agricultural Research
LLP	Low Level Presence
MT	Metric Ton
MMT	Million Metric Tons
NGOs	Non-Governmental Organizations
NBTs	New Plant Breeding Techniques

Table of Contents

CHAPTER 1 – PLANT BIOTECHNOLOGY

PART A – PRODUCTION AND TRADE

France is active in laboratory research on biotechnology, but no open-field testing is conducted in the country, due to repeated destruction of test plots by activists. No GE plants are commercially grown in France, but the country imports GE grains and feed ingredients for its breeding sector.

a) PRODUCT DEVELOPMENT

- **Laboratory research**

The actions of the **French National Institute for Agricultural Research** (INRA) are summarized in the report "Green Biotechnologies: Paving New Paths for Agriculture," available in English. It provides information on INRA's partnerships and programs, and gives a brief history of biotechnology.

INRA coordinates France's Green Biotechnology group ("green biotechnology" being defined as agricultural biotechnology), which brings together players from all over the agricultural sector, in order to launch research projects in plant genetics. More than 300 researchers are involved. This group contributes to the development of public-private partnerships.

INRA is involved in the national program called Investments for the Future with a total budget of 35 billion euros.[1] Within this framework, INRA pilots the following research projects, which involve both public and private organizations:

- Amaizing: identifying markers and candidate genes of corn responsible for traits of agronomic interest such as yield, quality and tolerance to abiotic stress
- AKER: creating new varieties of sugar beets to increase yields
- Biomass for the Future: developing new varieties of miscanthus and sorghum to produce lignocellulosic biomass for biofuels and chemicals
- Breedwheat: identifying markers and candidate genes for yield and quality traits of wheat under abiotic and biotic stress; developing new breeding methods
- Peamust: developing new varieties of peas to stabilize the yields and the quality of seeds
- Pro-bio3: developing innovative bioprocesses to produce lipids from renewable raw materials
- Rapsodyn: improving the oil yield of rapeseed and reducing nitrogen inputs
- Sunrise: optimizing the oil yield stability of sunflower under water constraints
- GENIUS: conducting research on new plant breeding techniques (genome editing using meganucleases or transcription activator-like effector nucleases TALENs, gene knockdown by RNA interference)

The **French Crop Research Institute (**Arvalis - Institut du Végétal), funded by farmers, is involved in research on genetically engineered grains. For more details on these projects, see the presentation of its biotech laboratory.

The **French Alternative Energies and Atomic Energy Commission** (CEA) has a Life Science

[1] In French: *Investissements d'Avenir*

Division that combines basic and applied research in the fields of energy and healthcare. Within this division, the Institute of Life Sciences Research and Technologies (iRSTV) carries out projects to examine biological processes on a molecular scale (it especially focuses on proteins). It contributes to more finalized work that is carried out in biotechnologies and in technologies for life science and health.

The **French Agricultural Research Centre for International Development** (CIRAD) uses a number of tools including molecular biology and biotechnology in its research. For example, CIRAD is involved in a regional genotyping, sequencing and cloning platform.[2] Other examples are the Rice Functional Genomics Platform (REFUGE) and the research unit on genetic improvement and adaptation of Mediterranean and tropical plants (AGAP).

During France's Presidency of the G20 in 2011, the action plan of the G20 Agricultural Ministries created **the Wheat Initiative**. This international consortium gathers public institutions and private companies to coordinate global wheat research. It "aims to reinforce synergies between bread and durum wheat national and international research programs to increase food security, nutritional value and safety while taking into account societal demands for sustainable and resilient agricultural production systems**."** The International Scientific Coordinator of this consortium is a researcher from INRA. In 2013, the Wheat Initiative issued a vision document, paving the way for action. This document specifically refers to the use of biotechnology, saying: "Increasing wheat production without agricultural expansion implies that we must increase wheat production on existing agricultural lands. This could be achieved partly by improving wheat yield genetic potential through a better understanding of the physiological traits involved and their interactions with the environment, and via their complementary introduction into new varieties by breeding and/or genetic manipulation."[3]

Several **French private companies** in the seed sector conduct laboratory research on plant biotechnology. The GE seeds they develop are intended for non-European markets.

- **Open-field testing**

France used to have the highest number of open-field test plots for GE plants in Europe, but continued destruction of these plots by activists has discouraged both public and private organizations from conducting research in open fields. Some of the labs that develop biotech plants in France conduct field tests in other countries.

The last experimental plot in France was a GE Poplar tree being tested as a bioenergy source by INRA. But their multi-year permit for open-field testing was not renewed by the Ministry of Agriculture and all the trees were destroyed in July 2013. The Ministry of Agriculture was supposed to make its decision based on the advice of the High Council for Biotechnology (HCB). However, the HCB struggled in giving a clear opinion on the renewal of the permit, since its two committees disagreed:

- The **science committee**, made up of 40 scientists, concluded that the test had "no impact on human health and on the environment," and proposed to continue the experiment.
- The **socio-economic and ethical committee**, which gathers jurists and members of environmental NGOs, opined that the objectives of the research were too vague and that it raised

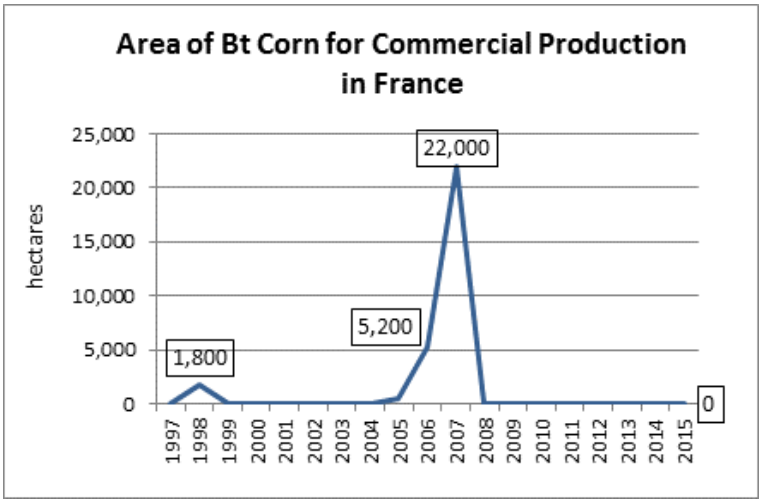
[2] Together with INRA, universities, CNRS and IRD
[3] See INRA's press release

"many socio-economic and ethical questions." This committee consequently proposed to put an end to the test.

Despite the destruction of its last remaining open-field test plot, INRA expressed its wish to continue research on GE crops.[4]

b) COMMERCIAL PRODUCTION

France does not produce any GE crops for commercial purposes. MON810 Bt corn is currently the only GE plant approved for cultivation in the EU and, since 2008, its cultivation has been banned in France (see Part B - Policy).



There were 1,800 hectares of GE corn planted in France in 1998, then none during the European *de facto* moratorium between 1999 and 2004. Cultivation was reinitiated between 2004 and 2007 and reached22,000 hectares before dropping to zero in 2008.

The technical results obtained by corn growers in 2006, with significantly higher yields and lower mycotoxin content than conventional corn, explain the rapid expansion of the planted area between 2005 and 2007.

c) EXPORTS

France does not export any GE products.

d) IMPORTS

The bulk of France's imports of biotech products consist of soybeans and soybean meal from the Americas, used as animal feed ingredients. The share of GE products out of total imports is estimated at more than 80 percent. French non-GE soybean production is expected to increase in the coming years but it remains marginal relative to imports. France also imports increasing amounts of Distillers' Dried Grains and Solubles (DDGS) and Corn Gluten Feed and Meal (CGFM), but the share of GE products out of total imports is estimated at less than 5 percent.

Trade data do not differentiate between conventional and GE varieties. The graphs presented in this section therefore include both categories. The table below gives the share of GE crops in total soy and corn production in major exporting countries.

[4] More information available in French on INRA website

Share of GE Crops in Total Production - 2014

	Soy	Corn
Argentina	99 %	95 %
Brazil	91 %	82 %
Canada	62 %	81 %
United States	94 %	93 %
Paraguay	96 %	-

Source: USDA FAS GAIN reports

- **France Imports around 4 Million Metric Tons of Soybean Products per Year.**[5]

France is a major importer of soybean products to feed animals in its livestock and poultry sectors. Domestic production of soybeans and substitutes is limited, and there is a strong demand for protein to meet basic requirements of compound feed formulations. The table below gives total French imports and the market share of its main suppliers in 2013/14. The decision of French importers on where to source soybean products from year to year is primarily based on price but quality can also be an element.

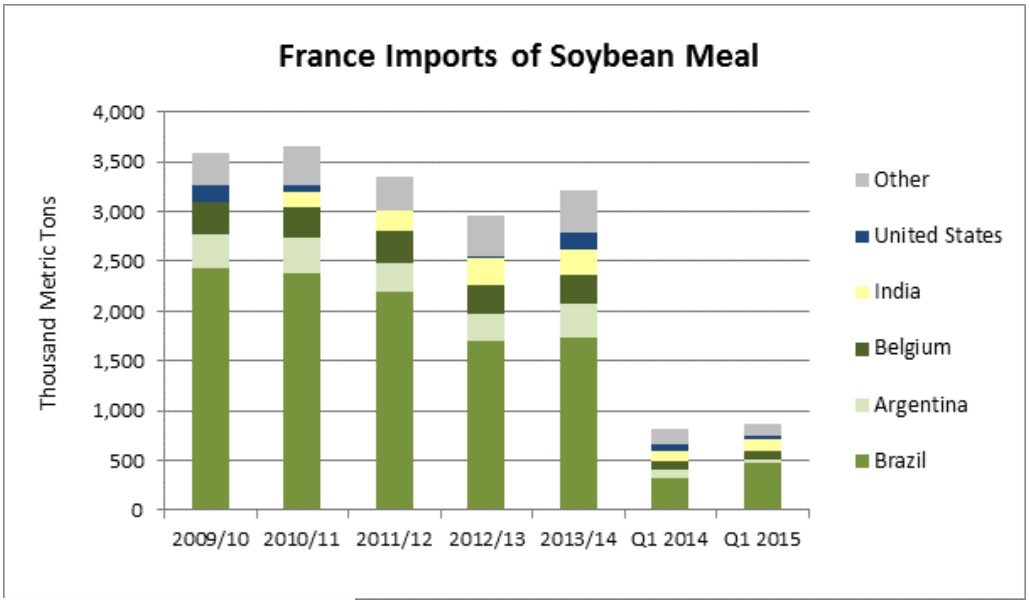
French Imports of Soybean Products in 2013/14

	Total French imports (MT)	Market Share of France's Main Suppliers			
		Argentina	Brazil	Paraguay	U.S.
Soybean meal	3,218,017	11%	54%	0%	5%
Soybeans	602,588	0%	18%	23%	43%

Source: Global Trade Atlas

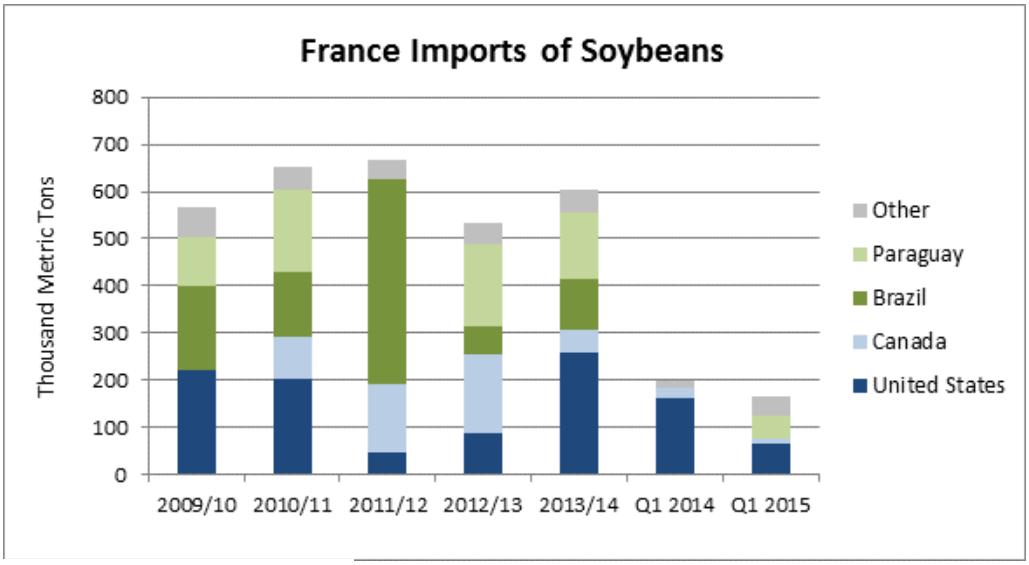
France's imports of soybean meal represent 3 to 3.5 million metric tons (MT) per year. The chart below gives the evolution of French imports between 2009/10 and the first quarter of 2015. Brazil remains the leading suppliers with a 54 percent market share in 2013/14. It is worth noting that the Indian share increased sharply during the last few years (from 0 percent in 2009/10 to 8 percent in 2013/14). India produces only non-GE soybeans. The EU has recently become one of India's top export destinations, with 18 percent market share in 2013/14, and France is India's leading export market within the EU (48 percent of India's exports to the EU in 2013/14).

[5] 2013/14 marketing year: October 2013 to September 2014



Source: Global Trade Atlas

France's imports of soybeans represent 500,000 to 700,000 MT per year (see graph below). The U.S. (43 percent market share in 2013/14) and Brazil (18 percent market share) are the leading suppliers. Paraguay has become a major supplier since 2009/10 and regularly overtakes Brazil, as it did in 2013/14 with a 23 percent market share.



Source: Global Trade Atlas

The demand for non-biotech soybean meal is estimated at 20 percent of the total market in France. It is mainly supplied by domestically-grown soybeans and imports of soybean products from Brazil and India. It has become increasingly difficult to source non-biotech soybeans during the last ten years, because available supplies are small and it is costly to avoid the mixing of GE and non-GE products during transportation and storage. As a consequence, the premium for non-biotech soybeans has increased sharply and now varies between 60 and 100 euros per MT.

- **France is Trying to Reduce its Dependence on Imported Proteins.**

French soybean production remains marginal relative to imports but it is expected to increase in the coming years, from 110,000 MT in 2013/14 to 250,000 MT in 2015/16 according to USDA's outlook. Domestic production is 100 percent non-GE as no GE soybean is allowed for cultivation in the EU. Several reasons explain the rise in the planted area:

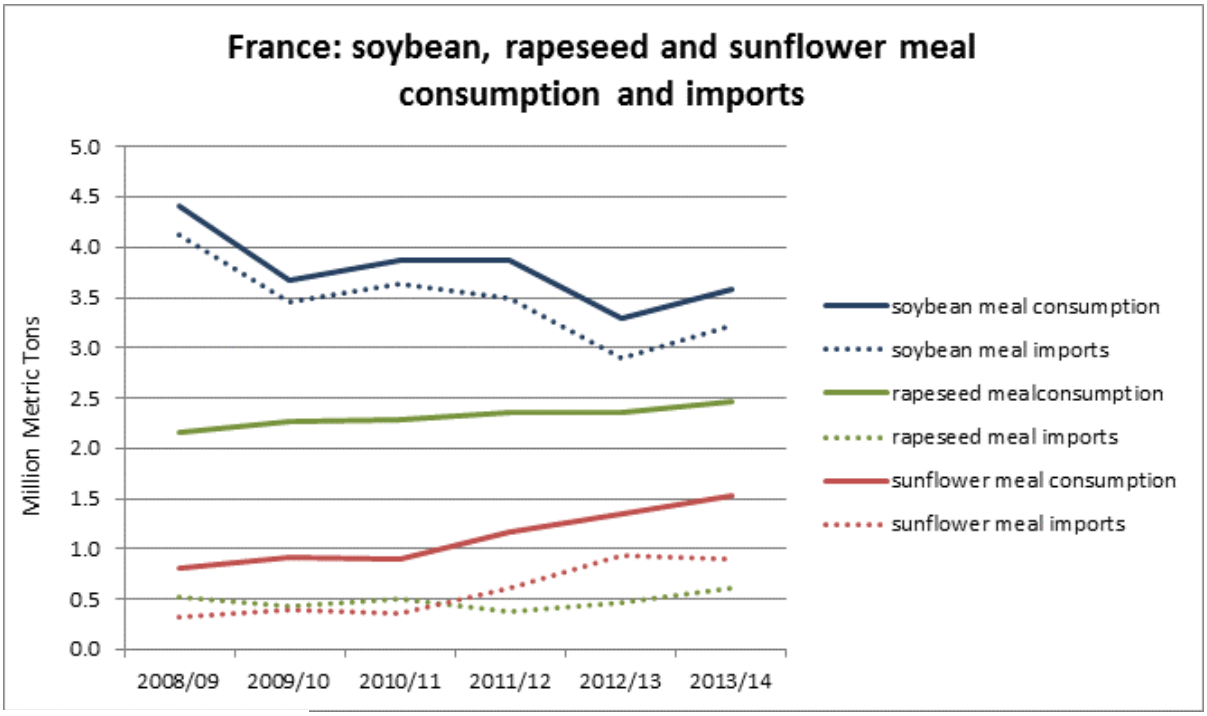
(a) Soy is more profitable than corn at the moment. The price of corn has fallen sharply and production costs are higher for corn, because it needs more inputs than soy. There is a premium for non-GE soy that varies between 60 and 100 euros per MT.
(b) The 2014-2020 Common Agricultural Policy (CAP) gives incentives to produce soybeans and protein crops. Under the CAP, France has chosen to give farmers coupled supports for soybeans. The level of support will be between 100 and 200 euros per hectare (depending on the total area in the country) from 2014/15. Besides, in France, soy areas can be considered as Ecological Focus Areas (EFA) under the new CAP, and farmers that have a certain amount of EFAs receive higher direct subsidies.
(c) Several French regions subsidize local production of soy and protein crops.

In addition, in December 2014, France released a plan to increase its production of protein crops between 2014 and 2020.[6] It mainly consists in direct subsidies to farmers from the CAP budget.

Three crushing units dedicated to non-GE soybeans will be put into operation in France in the coming years. Their total capacity will amount to 195,000 MT.

The chart below shows that soybean meal still dominates the oilseed meal market in France, although annual consumption has declined in favor of rapeseed and sunflower meals during the past few years (19 percent decrease between 2008/09 and 2013/14, from 4.4 to 3.6 million MT). Overall, soybean meal and rapeseed meal accounted for 47 and 32 percent of total meal consumption, respectively, in 2013/14. Sunflower meal has become a direct competitor of soybean meal in recent years given its improved digestibility and supply availabilities from the Black Sea area (Ukraine and Russia), which reduced prices. In MY 2013/14, it accounted for 20 percent of vegetable meals consumed in animal feed.

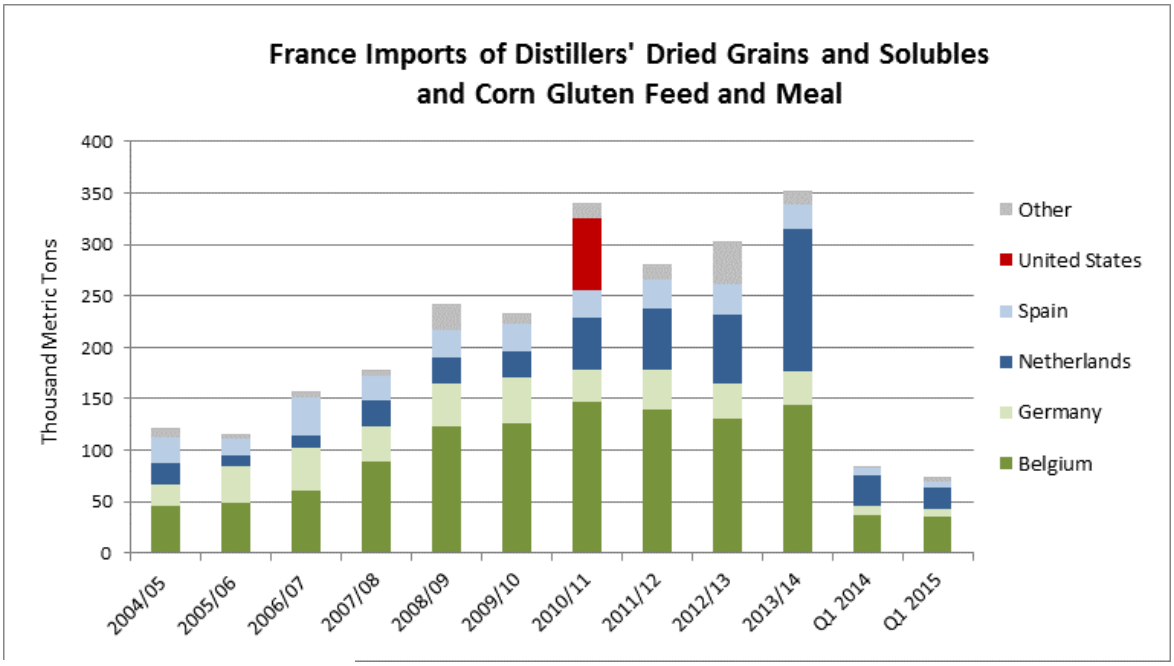
[6] See USDA report French Plan for Protein Crops 2014-2020



Source: FranceAgriMer

- **France Imports Increasing Quantities of Distillers' Dried Grains and Solubles, and Corn Gluten Feed and Meal.**

France imports of Distillers' Dried Grains and Solubles (DDGS) and Corn Gluten Feed and Meal (CGFM) have almost tripled over the past ten years, from 121 thousand MT in 2004/05 to 352 thousand MT in 2013/14. The share of GE products out of total imports is estimated at less than 5 percent. Among France's main suppliers, only Spain, which accounted for 7 percent of total imports in 2013/14, has potential to provide GE products. Spain produces GE corn and it imports DDGS and CGFM from the United States (79 thousand MT in 2013/14). The main suppliers of France (Belgium, the Netherlands, and Germany) do not produce GE crops and their imports of DDGS and CGFM from countries that produce GE crops are negligible. U.S. exports to France have dropped to zero since MY 2011/12, due to their potential content of biotech events unapproved in the EU.



Source: Global Trade Atlas

e) FOOD AID

France is not a food aid recipient.

PART B - POLICY

a) REGULATORY FRAMEWORK

France operates under the biotechnology regulatory framework of the EU. For more information about the European framework, please refer to USDA *EU-28 Agricultural Biotechnology Annual* report.

i. Responsible government ministries and role in the regulation of GE plants

Several ministries are involved in oversight of GE plants in France:

- The Ministry of Environment has the lead;
- The Ministry of Agriculture deals with cultivation and coexistence, as well as plant and animal health issues;
- The Ministry of Economy's Fraud Control Office (DGCCRF) controls imported products and is involved in low-level presence (LLP) issues;
- The Ministry of Research covers public research programs (for example, most of INRA's budget is funded by the Ministry of Research);
- The Ministry of Health is involved in the impact on human health.

These ministries have a joint website to communicate on biotechnology policies and regulations.

ii. Role and membership of biosafety authority

The French High Council for Biotechnology (HCB) was established by the Biotech Bill of 2008. Its composition and functions were modified in September 2014.[7]

As part of the European approval framework, it is in charge of evaluating environmental risks of biotech products under review for approval for cultivation or commercialization. Since September 2014, it is no longer responsible for health risks.

It is composed of a science committee and a socio-economic and ethics committee. Both committees review biotech dossiers and provide their respective conclusions and recommendations to the Government of France and to the European Food Safety Authority (EFSA).

France's National Agency for Food, Environmental and Occupational Health and Safety (ANSES) is in charge of reviewing the food safety aspects of GE crops and their derived products in food and feed.[8] It transmits its conclusions and recommendations to EFSA, as part of the European approval framework.

iii. Political factors influencing regulatory decisions related to plant biotechnology

Biotech opponents have played an important part in the adoption of the regulatory decisions related to plant biotechnology, both directly and through their impact on public opinion (see Part C. Marketing – b. Public / Private Opinion).

iv. Distinctions between regulatory treatment of the approval for food, feed, processing and environmental release

Since the beginning of the commercialization of biotech plants in the early 1990's, France has authorized biotech imports (due to the need for protein-rich ingredients in animal feeds), but restricted research and banned cultivation of biotech crops.

The process for approval of biotech products is carried out at the EU level, but the French Government has some latitude to implement its own regulations as long as they comply with EU regulations. A large number of biotech events have been approved for feed and food use at the European level and have not been questioned by French authorities. However, France has banned the cultivation of MON810 corn, even though it was approved by the EU.

v. Legislation and regulations with the potential to affect U.S. trade

Legislation and regulations with the potential to affect U.S. trade include the national ban on GE corn cultivation and the non-biotech labeling system implemented at the national level.

vi. Timeline followed for approvals

European Directive 2001/18/EC provides the framework for the deliberate release into the environment of GE plants. Regulation (EC) No 1829/2003 covers the authorization for placing GE products on the market for food and feed. For more information, please refer to USDA *EU-28 Agricultural*

[7] See decree, September 2014
[8] See ANSES website dedicated to agricultural biotech products (in English)

Biotechnology Annual report.

b) APPROVALS

- **Food, feed, processing**

All of the biotech events approved for feed and food use in the EU under Regulation EC 1829/2003 are authorized in France. The full list of these products, including events for which an authorization procedure is pending, is available on the European Commission's website.

On April 24, 2015, the European Commission adopted:

- 10 new authorizations for GE crops for food or feed use: MON 87460 maize, MON 87705 soybean, MON 87708 soybean, MON 87769 soybean, 305423 soybean, BPS-CV127-9 soybean, MON 88302, oilseed rape, T304-40 cotton, MON 88913 cotton, LLCotton25xGHB614 cotton
- 7 renewals of existing authorizations: T25 maize, NK603 maize, GT73 oilseed rape, MON 531 x MON 1445 cotton, MON 15985 cotton; MON 531 cotton and MON 1445 cotton
- the authorization for the importation of two GE cut flowers: carnations line IFD-25958-3 and line IFD-26407-2

- **Cultivation**

MON810 corn is the only GE plant approved for cultivation in the EU. In June 2014, France passed a law that prohibits GE corn cultivation in France.[9] In March 2015, with the support of the French Government, the EU released Directive (EU) 2015/412 that allows member states to restrict or ban the cultivation of EU-authorized GE plants in their territory for reasons other than risks to human health, animal health or the environment (see CHAPTER 1 PLANT BIOTECHNOLOGY, PART B POLICY, h) TRADE BARRIERS).

c) FIELD TESTING

In France, the deliberate release of GE plants in open environments for research purposes is subject to prior approval by the government, usually through the Ministry of Environment.[10] The government must consider the opinion of the HCB regarding possible risks for public health and the environment before granting an authorization. The government must also hold a public consultation on the Internet and provide advance notice to the local authorities of areas where test plots for GE plants are located. The authorization may be amended or suspended if justified by new information.

No open-field testing is conducted in the country due to repeated destruction of test plots by activists. For more information, please see CHAPTER 1 – PLANT BIOTECHNOLOGY, PART A – PRODUCTION AND TRADE, a) PRODUCT DEVELOPMENT.

d) STACKED EVENT APPROVALS

[9] Full text in French
[10] Environmental Code art. L533-3

The regulation in place in France is that of the EU. The risk assessment follows the provisions of Regulation (EU) No 503/2013, Annex II. The applicant shall provide a risk assessment of each single event or refer to already submitted applications. The risk assessment of stacked events shall also include an evaluation of (a) stability of the events, (b) expression of the events, and (c) potential interactions between the events.

e) ADDITIONAL REQUIREMENTS

French legislation subjects the cultivation of GE crops to transparency rules. The location where GE crops are being grown must be declared to the government and this information is entered into a national register, available online.[11] This rule has been controversial, since this public register has been used by activists to locate and destroy open-field trials of GE crops.

French lawmakers therefore established a dual penalty system whereby not declaring the location of GE crops is punishable by a 30,000 euro fine (approximately 39,000 USD) and six months of incarceration, and the destruction or degradation of authorized GE crops is punishable by a 75,000 euros fine (approximately 96,000 USD) and two years of incarceration.[12] The destruction or degradation of GE crops that were planted for research purposes is punished by a 150,000 euros fine (approximately 193,000 USD) and three years of incarceration. However, these penalties have not deterred activists from destroying most open-field trials of GE crops.

In addition to informing the government authorities, a GE farmer is required to notify the farmers of surrounding land of his intention to plant GE crops, prior to sowing.[13]

f) COEXISTENCE

French legislation requires that GE plants only be grown, sold, or used "in a manner that respects the environment and public health, agricultural structures, local ecosystems, production and commercial channels labeled as 'without GE plants,' and with full transparency."[14] It also guarantees the "freedom to consume and produce with or without GE plants." In order to promote these goals, French legislation aims to limit the spread of GE plants beyond their intended fields. It thus states that the cultivation, harvest, storage, and transportation of GE crops are subject to certain technical rules established by the Minister of Agriculture, after consultation with the HCB and the Minister of the Environment.[15] Rules governing distances between GE crops and other fields are highlighted as being important to avoid the accidental presence of GE plants in other crops. Violations of these technical rules on separation distances can be punished by a fine of 75,000 euros and two years of incarceration.[16] These distance rules have not yet been defined by the Minister of Agriculture.

In addition to the rules discussed above, French legislation provides for "biological monitoring" of

[11] Rural Code art. L663-1
[12] Rural Code art. L671-14 and L671-15
[13] Rural Code art. L663-1
[14] Environmental Code art. L531-2-1
[15] Rural Code art. L663-2
[16] Rural Code art. L671-15

French territory, to observe the health of plant life and watch for possible unforeseen consequences of agricultural practices, including the use of GE plants.[17] This is coordinated by the Committee for Biological Monitoring of the Territory, which was created for that purpose by the 2008 law on GE plants.[18] This body submits an annual report to both houses of the French Parliament and can alert the government if it finds that certain unintended consequences require that special measures be taken.

French legislation provides that a GE crop cultivator will be automatically liable when the accidental spread of his plants causes economic harm to a non-GE crops cultivator.[19] If a non-GE crop cultivator ends up having to label his or her crops as GE, because of spread from a nearby field, he can seek compensation for the resulting depreciation of his crop's value. It is also mandatory for any cultivator who uses GE crops to obtain liability insurance coverage. However, insurance companies have been unwilling to cover GE crops in France.

In practice, when GE corn was grown in France, a buffer zone of 24 rows and 50 meters was put in place around the fields. The coexistence research programs in place in France, conducted by Arvalis-Institut du Vegetal and the French Corn Growers Association (AGPM), included the following:

- The POECB (Programme opérationnel d'évaluation des cultures issues des biotechnologies, 2002-2004) studied the feasibility of coexistence in real field conditions (from seed to storage facilities), assessing risks based on the results of pollen dispersion studies;
- The PACB (Programme d'accompagnement des cultures issues des biotechnologies, 2005-2006) developed and implemented a guide for GE corn cultivation, focusing on risk management;
- A 2007 study surveyed fields commercially planted to GE corn to test the efficiency of strengthened coexistence rules.

Several French research institutes (including INRA and Arvalis-Institut du Vegetal) have been involved in European coexistence research programs:

- SIGMEA (2004-2007) built a decision-making tool that helps minimize the risk of gene flow;
- COEXTRA (2005-2009) defined good harvesting and processing practices aimed at managing the coexistence of GE and non-GE sectors affordably.

In March 2015, the research project called "Practical Implementation of Coexistence in Europe" (PRICE), of which INRA is a partner, released its conclusions. The main results are the following:

- The current measures implemented to ensure coexistence of GE and non-GE crops in the EU are practically feasible, both at farm level and along the supply chain. However, they come with additional costs, which are partly paid by consumers and other supply chain stakeholders.
- During two years, field trials with GE corn were conducted in Spain, applying buffer zones or different sowing dates resulting in asynchrony in flowering. Researchers concluded that the current isolation distances set up by most member states were disproportionate and may lead to unnecessary costs and burden.
- Another team developed a decision-making tool that evaluates the effect of specific buffer zones or of a difference in flowering time on the probability of cross-pollination for corn. It thus makes it feasible to implement proportional coexistence measures.

[17] Rural Code art. L251-1
[18] Comité de surveillance biologique du territoire
[19] Rural Code art. L663-4

g) LABELING

- **European Mandatory Labeling of GE Products**

Labeling in France complies with EU regulations (EC) No 1829/2003 and (EC) No 1830/2003 (see USDA *EU-28 Agricultural Biotechnology Annual 2015* report).

The French Fraud Control Office of the Ministry of Economy, Finance and Industry (DGCCRF) enforces compliance with the regulation. An explanation on biotech labeling regulation is available on the Fraud Control Office's website.

- **France's Voluntary GE-Free Labeling**

A biotech-free labeling system has been in place at the national level since 2012 (see explanations by the Ministry of Environment). The system is based on the 2012 decree relative to voluntary GE-free labeling and on HCB's 2009 recommendation on the definition of GE-free labeling.

The 2012 decree only applies to food produced in France (imported products are not concerned). It states that:

- Plant products can be labelled as "GE free" if they contain less than 0.1 percent GE plants.
- For animal products, two thresholds are set and must be indicated on the label: 1) under 0.1 percent is labeled as "fed without GE plants (0.1 percent)," and 2) under 0.9 percent as "fed without GE plants (0.9 percent)."
- Processed animal products, milk and eggs can be labelled as "sourced from animals fed without GE plants (0.1 or 0.9 percent)."
- For apiculture products, biotech plants should be no closer than three kilometers to an apiary.

- **Voluntary Private Initiatives**

Several voluntary initiatives put in place by the food industry and supermarket chains use GE-free labeling. However, these represent a minor share of the total French food market. For instance:

- Canned sweet corn has been sold with a specific "GE-free" logo since 2004.
- The supermarket chain Carrefour puts a "fed without GMO" logo on animal products sold under the Carrefour-branded name.
- Several labels of origin among the poultry, beef, pork, and goat cheese industry have committed themselves to use biotech-free feed. They have a collective website.

h) TRADE BARRIERS

- **Cultivation Ban**

Cultivation of GE corn has been banned in France since 2008.

According to EU legislation, when a member state, as a result of new information, has detailed grounds for considering that an approved biotech event constitutes a risk to human health, animal health or the

environment, the member state may provisionally restrict or prohibit the use of this biotech event on its territory (see Directive 2001/18/EC, Article 23 Safeguard clause and Regulation (EC) No 1829/2003, Article 34 Emergency measures).

Under this legislation, France banned the cultivation of MON810 in 2008 but the French decree was deemed illegal by the Court of Justice of the EU and the French Supreme Court in 2011.[20] France took another decree in 2012, which was invalidated by the Supreme Court in 2013.[21] In May 2014, the French Parliament passed a law that prohibits GE corn cultivation in France.[22]

In March 2015, with the support of the French Government, the EU released Directive (EU) 2015/412 that allows member states to restrict or ban the cultivation of EU-authorized GE plants in their territory for reasons other than risks to human health, animal health or the environment. For more information, please see USDA *EU-28 Agricultural Biotechnology Annual 2015* report.

In France, both biotech advocates and biotech opponents deplore the fact that this Directive renationalizes a common EU policy, which weakens the European Union and is contrary to the spirit of the single market. They underline that it creates distortions of competition between EU countries. Seed companies state that this decision reduces their level of certainty on the EU market and prompts them to concentrate their efforts on non-EU countries. French scientists criticize the fact that this directive allows member states to ban GE crops cultivation for non-scientific reasons.

- **Imports Ban**

On April 22, 2015, the European Commission released a proposal for a regulation that would allow member states of the EU to restrict or ban the use of EU-authorized GE crops or products. Opt-outs would have to be based on reasons other than those assessed at the EU level, since the review by the EFSA would have already deemed the crops or products to be safe. The proposal needs to be debated by the European Parliament and the Council of the European Union before it is adopted, which could take years. For the European Commission, this proposal is a way to shift the responsibility for GMO authorization decisions to the member states. For more information, please see USDA *EU-28 Agricultural Biotechnology Annual 2015* report.

France has not yet expressed an official position on the European Commission proposal, but it opposes it. If the proposal were adopted, France would be placed in the very uncomfortable position of facing great pressure to ban the use of GE products from anti-biotech groups. Such a ban would be devastating to the already stressed French livestock and poultry sectors, since it would be very difficult and costly to source sufficient non-GE feed ingredients to meet their needs. Given this situation, French policy makers do not want to be in the position of having the responsibility of banning GE products or not.

The main farm union in France (FNSEA) openly opposes the proposal, saying that "the European Union is a common market so we need common rules." Anti-biotech activists criticize the proposal too, saying that member states that want to ban the use of GE products would be unable to find justifications compatible with the EU legislation and the international obligations of the EU.

[20] See the 2008 decree
[21] See the 2012 decree
[22] See French Senate

- **Reformulation**

Since the European regulation on biotech traceability and labeling for food and feed has been implemented in France, the French food industry and supermarket chains have reformulated to exclude potential GE ingredients, such as corn starch, soy lecithin, and soy oil.

i) INTELLECTUAL PROPERTY RIGHTS

France supports the plant certificate system[23] under the International Union for the Protection of new Varieties of Plants (UPOV), rather than the patent system.

On March 25, 2015, the Enlarged Board of Appeal of the European Patent Office ruled that plants or seeds obtained through conventional breeding methods were patentable.[24] The French seed industry deplores this decision. They advocate that patents should only be allowed for biotechnological inventions. They state that "this decision allows patenting of native genes. Varieties that possess this characteristic will not be freely accessible. Genetic progress will be hindered." They underline that this decision contradicts the breeder's exemption, which allows free use of a protected variety for further breeding under the plant certificate system.

j) CARTAGENA PROTOCOL RATIFICATION

The Cartagena Protocol on Biosafety (CPB) aims to ensure the safe handling, transport, and use of living modified organisms. France signed it in 2000 and ratified it in 2003. Regulations implementing the CBP are in place.

The competent national authorities are:
- the Ministry of Higher Education and Research;
- the Ministry of Ecology and Sustainable Development;
- the Ministry of Economy, Finance and Industry;
- the National Agency for Health Safety of Food, Environment, and Work (ANSES);
- the Ministry of Agriculture.

Focal points for France are in the Ministry of Ecology and Sustainable Development (Biosafety Clearing House Focal Point) and Ministry of Foreign Affairs (Cartagena Protocol on Biosafety National Focal Point, Convention on Biological Diversity National Focal Point).

For more information, see France's profile on the CBP website.

k) INTERNATIONAL TREATIES/FORA

As a member state of the EU, France's position in international organizations is generally expressed as similar to that of the EU.

[23] In French: *Certificat d'Obtention Végétale (COV)*
[24] European Patent Office's decision

On June 3, 2015, the French Minister of Foreign Affairs presented draft legislation that approves a 2005 amendment to the United Nations "Convention on Access to Information, Public Participation in Decision Making and Access to Justice in Environmental Matters." This amendment, adopted during the second meeting of the Parties to this Convention, in May 2005, makes it mandatory for the Parties to "provide for early and effective information and public participation prior to making decisions on whether to permit the deliberate release into the environment and placing on the market of genetically modified organisms." French and EU legislations already comply with these conditions. The EU approved this amendment in 2006.

l) RELATED ISSUES

COP21 United Nations Conference on Climate Change will be held in Paris in December 2015. On February 20, 2015, France hosted an International Forum on Agriculture and Climate Change. During the closing speech, the President of France stated that progress in genetics was one of the four levers that could enable agriculture to face climate change: "It is about producing more with a reduced carbon footprint and developing new products adapted to new climate conditions, namely plants that resist to drought, animals that emit less greenhouse gases, it is also about using less water. (…) It is about using all the inventions related to biological pest control, information technology, biotechnology and agricultural equipment (…), inventing new plant breeding techniques."

m) MONITORING AND TESTING

Monitoring and testing is performed randomly by government agents on food products, feed products, seeds and crops in order to make sure that GE products approval and labeling regulations are met. In addition, GE products on the market must be monitored by the holder of the approval in order to detect any potential non-intentional effects linked to GE products.[25]

n) LOW LEVEL PRESENCE POLICY

In 2011, the European Commission put in place a tolerance of 0.1 percent for unauthorized GE products in feed. This tolerance applies to GE products authorized for commercialization in a non-EU country and for which an EU authorization request has been lodged with EFSA. It does not apply to food and seeds.

PART C - MARKETING

a) MARKET ACCEPTANCE

Acceptance of GE crops in France must be looked at from the differing points of view of producers, retailers, and consumers.

Feed grain producers in France, especially corn producers, generally support the use of GE varieties, due to the proven yield gains and lower production costs. French farmers were allowed to cultivate Bt corn

[25] For more information, see the interministerial website dedicated to biotech products regulation

between 2005 and 2007, and most of them welcomed the technology. However, due to negative consumer perceptions, acceptance is lower among producers in other sectors where the products are consumed directly, such as vegetables and fruit.

Market acceptance of GE products is high in the animal production sectors and in their feed supply chains, including animal feed compounders, as well as poultry, swine and cattle farmers who depend on imported soybean products to make balanced animal feeds.

In France, consumer attitudes towards GE products are strongly negative, with concerns about the potential risks of cultivating and consuming them. In 2012, 79 percent of French people said they were "worried" about the presence of GE products in food, and 71 percent of them thought that they represented "a significant risk in terms of food safety."[26] Most of them believe that continued research is needed on this subject.[27]

As a consequence of consumers' negative perceptions, food retailers, especially major supermarkets, market themselves as carrying only non-GE products. They also fear actions by activist organizations, such as protests and destruction of products in stores, which would generate negative publicity.

b) PUBLIC/PRIVATE OPINIONS

- **Anti-Biotech Activists Focus on Traits Rather than on Techniques**

Activist non-governmental organizations have a long history of opposing the cultivation, importation, and consumption of GE crops and products in France. Their actions include the systematic destruction of test plots, the destruction of imported soybean products, and regular communication campaigns. Many of these actions have led to arrests and criminal charges against activists. Courts decisions have varied widely, with results ranging from acquittals to prison sentences.

Although biotech opponents are usually considered small in number, their communication skills are top-notch and amplified by the media. They strongly influence public opinion. Besides, the public opinion generally expresses distrust of private international biotech companies that are the most visible. Academic and public research exists but is less visible.

Activists used to destroy crops produced through transgenesis. Now they focus on certain traits, whatever the technique used to produce them. In April 2015, they destroyed a test plot of herbicide resistant rapeseed produced through mutagenesis. They want plants produced though mutagenesis, a technique invented in the 1930s, to be legally considered as GMOs. They ask for a moratorium on herbicide resistant crops, whatever the technique used to produce them. Herbicide resistant rapeseed and sunflower produced through mutagenesis are currently being cultivated in France.

- **Arguments of Biotech Advocates and Opponents in France**

[26] Source: IFOP (French Institute of Public Opinion)
[27] Source: CSA

In 2014, before it published a decree to ban the cultivation of GE corn in France, the government held a public consultation. The summary of the comments received from the public gives an overview of the arguments of biotech advocates and opponents.[28]

In this consultation, the main arguments against GE plants cultivation were the fact that organic and GE-free crop production could not coexist with GE plants, uncertainty about the environmental and health risks of GE crops and the application of the precautionary principle, the limited interest of GE crops cultivation by farmers, the fact that farmers would depend on international companies if they cultivated GE plants, opposition to large-scale agriculture, and the defense of small farmers.

The main arguments in favor of GE plants were the technical efficiency of Bt corn (less insecticides used, less mycotoxins in corn, and increased yields), the positive opinions of both French and European food safety authorities, the fact that Bt corn has been cultivated and consumed for more than 15 years in other countries and the absence of demonstrated environmental and health risks, the competitiveness of French agriculture and higher revenues for farmers, and the fact that organic and GE-free crop production could coexist with GE plants.

- **The Government Says it Differentiates Between Two Categories of GE Plants**

The position of the French government has changed insofar as it now differentiates between what it calls "first generation" and "second generation" biotech plants. The "first generation" includes herbicide and insect resistant plants, which the government opposes. The "second generation" consists of "crops that bring consumer or environmental benefits," with for instance enhanced nutritional content, reduced nitrogen use or improved water efficiency, which the government says it does not oppose.

In February 2015, during the closing speech of a Forum on Agriculture and Climate Change held in Paris, the President of France expressed his position as follows: "Consumers in France and in Europe are opposed to the cultivation of first generation GE plants. They see threats to health and to the environment without sufficient benefits to counterbalance the risks. That is why France and the European Union have adopted a clear and firm position, including in the negotiation of the Transatlantic Trade and Investment Partnership. It is a societal choice and a matter of food sovereignty. However, researchers in Europe and in France should be able to do their work and to advance science. Public research has to be free in Europe within the limits established by law and it should not fear intimidation, pressure and threats. We need research to feed the world, fight climate change, and produce better."

In spite of these statements, the government has done little to favor research so far. In 2013, the Ministry of Agriculture did not renew the permit for open-field testing of the last experimental plot involving GE plants in France, a Poplar tree being tested as a bioenergy source by public researchers, and all the trees were destroyed.

- **An Emerging Debate on New Breeding Techniques**

France conducts research on New Breeding Techniques (NBTs), among others under the Genius

[28] See the summary of public comments in French

program. There is an emerging debate on this subject. The High Council for Biotechnology is working on the definition and uses of NBTs as well as on the ethical questions they rise. Opponents want the plants produced through these techniques to be legally considered as GMOs under the EU framework. A working group established by the European Commission in 2007 is still evaluating whether eight NBTs constitute techniques of genetic modification. For more information, please see USDA *EU-28 Agricultural Biotechnology Annual* report.

c) MARKETING STUDIES

N/A

CHAPTER 2 – ANIMAL BIOTECHNOLOGY

Animals produced through biotechnology in France, using techniques such as cloning and genetic engineering (transgenesis, gene knock-out technology), are mainly used in basic and medical research to study human diseases, to produce organs and therapeutic proteins (from milk and eggs) and to improve animal breeding. The only cloned animals commercialized in the country are sport horses, which are not used for human consumption.

PART E – PRODUCTION AND TRADE

a) BIOTECHNOLOGY PRODUCT DEVELOPMENT

The French National Institute for Agricultural Research (INRA) conducts research programs on animal genomics to improve animal breeding. INRA's website on animal genomics tells that "animal genomics is considered to have tremendous potential in the livestock sector as evidenced by recent research on the identification of several genomic zones (Quantitative Trait Loci - QTL) responsible for a decline in the fertility of dairy cows. Likewise, genomic research on sheep has led to the identification of the mutation and unique processes that spur the production of muscle tissue, ultimately producing an animal that yields high-quality meat."

b) COMMERCIAL PRODUCTION

No GE animals for food use are commercialized in France. A French company clones sport horses, in collaboration with Italian industry.

c) BIOTECHNOLOGY EXPORTS

No GE animals are exported from France.

PART F – POLICY

a) REGULATION

i. Responsible government ministries

As a member state of the EU, France implements the EU Regulation on animal biotechnology. EFSA is in charge of risk assessment,[29] while the European Commission's Directorate General for Health and Consumers (DG SANCO) is in charge of governance and risk management.

In France, the High Council for Biotechnology is in charge of environmental risk assessment, while the Agency for Food, Environmental and Occupational Health and Safety is in charge of food safety risk assessment.

ii. Political factors influencing regulatory decisions

France's Government is opposed to using biotechnology in animal breeding due to ethical and animal welfare concerns.

iii. Legislations and regulations with the potential to affect U.S. trade

France asked the European authorities to put in place a moratorium on clones and their products and a system of traceability and labeling of the products derived from offspring of clones, in line with the position of the European Parliament.

In 2008, the official French Advisory Committee on Food (CNA) to the Ministry of Agriculture released a report on the consumption of products derived from cloned animals and their offspring.[30] This report recommended a ban on the marketing of food products derived from cloned animals or their offspring, cloning practices for breeding, and importing cloned animals and their offspring.

b) LABELING AND TRACEABILITY

Laboratory animals developed are all labeled and traced and are not released into the environment. The exception is commercialized cloned sport horses.

c) TRADE BARRIERS

Public and governmental opposition to the use of animal biotechnology is a barrier to trade.

d) INTELLECTUAL PROPERTY RIGHTS

N/A

e) INTERNATIONAL TREATIES/FORA

The 2012 article entitled "The current state of GE governance: are we ready for GE animals?" describes international organizations approaches to animal biotechnology as follows:

[29] See EFSA's website on GE animals and on animal cloning
[30] See the summary of the report, in English or the full report, in French

- The Organization for Economic Cooperation and Development (OECD) and the Codex Alimentarius Commission (CAC) develop guidelines on biotech animals. For example, the CAC developed a "Guideline for the conduct of food safety assessment of foods derived from recombinant-DNA animals."
- The World Organization for Animal Health (OIE) has guidelines on the use of cloned animals (no specific guidelines on GE animals).

France hosts both OECD and OIE.

PART G – MARKETING

a) MARKET ACCEPTANCE

Market acceptance is low among consumers, industry, and policy makers.

b) PUBLIC/PRIVATE OPINIONS

France's livestock industry doesn't favor the commercialization of cloned or GE animals, but is interested in animal genomics and marker assisted selection for animal breeding.

c) MARKET STUDIES

There are no consumer GE products in the market to allow market studies.