GENETICALLY MODIFIED FOOD





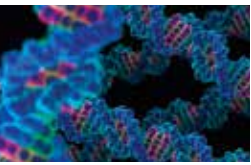





Food Safety
AUTHORITY OF IRELAND

GENETICALLY MODIFIED FOOD

The debate surrounding genetically modified (GM) food has been ongoing for decades, particularly within the EU where there are mixed views on whether it is safe or even useful. This leaflet is intended to provide information about some of the questions consumers may have about GM foods and how they are controlled in Ireland and the EU.



Genetic Material (DNA)

All living organisms have some form of genetic material which enables them to survive and replicate. With the exception of some viruses, DNA (deoxyribonucleic acid) is the genetic material which carries the instructions for life, and is made up of a series of four individual molecules called nucleotides. An organism's DNA contains numerous genes which are particular segments of DNA by which specific products, primarily proteins, are made. The type of protein made depends on the genetic code or specific linear sequence of the four nucleotides that make up a gene.



Traditional Breeding

Evolutionary changes that resulted in primitive life forms becoming more sophisticated organisms over many thousands of years were based on stable and inheritable changes in DNA that occurred in response to environmental and other natural selection pressures. For more than a century, humans have been active in bringing about change to crops, animals and microorganisms. Similarly, selective breeding has resulted in enhanced food production from crops and farm animals, some of which bear little resemblance to their ancestors. Induced changes in plant DNA (mutagenesis) have resulted in plants with new and desirable characteristics being developed for food production.

Genetic Engineering

Scientists can now identify, isolate and manipulate individual or groups of genes that are responsible for specific physical or metabolic traits. With this knowledge, plants, animals or microorganisms can be directly altered (engineered) so that they possess particular characteristics. This technology is routinely used for the contained production of pharmaceuticals and medicines, and in the development of GM plants, animals and microorganisms.

Genetic modification, genetic manipulation and gene technology are other terms used to describe the process of altering or transferring genes.

GM Food

Genetically modified (GM) food differs from non-GM (conventional) food in that it contains or is produced from a genetically modified organism (GMO). GM food ingredients that can be marketed in the EU are primarily derived from GM plants that have been engineered to be resistant to attack by specific pests or be tolerant to certain herbicides. There are no GM animals yet used in food production, though a number are in development at research facilities around the world, with some undergoing safety assessment for possible food use.



Safety of GM Food

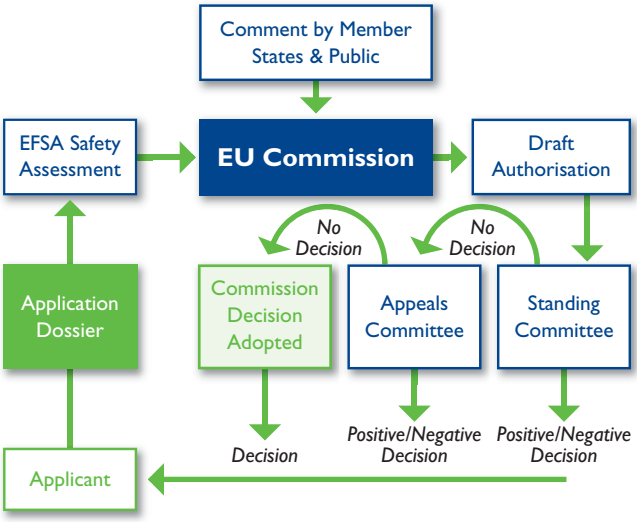
GM food is one of the most scrutinised food types from a safety perspective. Though zero risk is not possible for any food, the rigorous safety assessment of GM food by the European Food Safety Authority (EFSA), along with additional scrutiny by EU Member States, ensures that GM foods allowed on the EU market are as safe as their non-GM counterparts.

EU GM Food Legislation

The process by which GM food and feed is authorised and labelled within the EU is governed by the GM Food and Feed Regulation (EC No. 1829/2003). The Traceability and Labelling Regulation (EC No. 1830/2003) is the other central piece of legislation that ensures that food and feed produced from GMOs and any derived products are labelled and traceable from the first and subsequent stages of placing on the market.

Authorisation of GM Food in the EU

GM food to be placed on the market in the EU must first undergo a safety assessment by EFSA. Member States and the public have the opportunity to comment on both the application and the EFSA safety assessment before a decision is taken on authorisation. A Standing Committee of experts from Member States decides on whether to authorise or not a GM food. Where a decision is not reached by the Standing Committee, the application is passed to the Appeals Committee to decide. If the Appeals Committee fails to deliver a decision, the Commission may then adopt the draft proposal. GM food authorisation is for a period of 10 years, which must be renewed if it is to remain on the market.



GM Food Ingredients Authorised in the EU

Food ingredients and additives from five types of GM crops may be found on the EU market:

- **Soya bean** (pest resistant / herbicide tolerant / modified fatty acid profile) – Food and food additives
- **Maize** (pest resistant / herbicide tolerant / drought tolerance) – Food and food additives
- **Oilseed rape** (herbicide tolerant) – Food and food additives
- **Cotton** (pest resistant / herbicide tolerant) – Food and food additives
- **Sugar beet** (herbicide tolerant) – Food

Soya beans are a rich source of plant protein used in a wide variety of foods, while soya lecithin is an authorised additive (E322) used as an emulsifier in processed foods. Maize can also be found in many processed foods with refined oil from maize, soya bean, rape seed and cotton seed being used in processed foods and as vegetable cooking oil. The EU Register of authorised GM Food and Feed can be found on the EU Commission website (https://webgate.ec.europa.eu/dyna/gm_register/index_en.cfm).



GM Food Labelling

Food labels are essential for consumers to make an informed choice about the food they purchase. Labelling of food consisting of or containing GM ingredients is mandatory under EU Legislation:

- A specific GM label is required if more than 0.9% of a food or ingredient is derived from a GM source. If a GM ingredient is at or below the 0.9% threshold, food business operators must be able to show that its presence is not intentional
- The labelling threshold refers to individual ingredients and is not cumulative for different GM ingredients. A food containing soya (0.7% of which is GM) and maize (0.8% of which is GM), does not require a GM label
- Labelling of GM foods is required regardless of whether DNA or protein from the original GMO is detectable
- GM foods or ingredients not authorised within the EU are not permitted in food at any level

'GM-free' Labels

'GM-free' or similar food labels are not required by law and their use by food producers is voluntary. The Regulation on the provision of food information to consumers, in particular food labelling, (EU No 1169/2011) stipulates that food labels may not mislead the consumer; *"by suggesting that the foodstuff possesses special characteristics when in fact all similar foodstuffs possess such characteristics"*.

Food labels that may be considered misleading include:

- 'GM-free' labels on meat, milk, eggs, etc. – (foods derived from GM animals are not authorised for the EU market)
- 'GM-free' label on food from animals fed non-GM feed – (food derived from animals fed GM feed is not GM food as the animals' DNA has not been altered)
- 'GM-free' label on a food that does not have a GM counterpart – (all such products are 'GM-free', e.g. apples, oranges, peanuts etc.)
- 'GM-free' label on organic food – (the use of GMOs is prohibited in the production of organic food)
- 'GM-free' label on a food that contains any level of GM ingredients – (there is no set threshold below which a food is considered 'GM-free')



Acceptable label examples:

- 'GM-free' maize – where only non-GM maize is present
- 'From animals fed non-GM feed' – where meat, milk, eggs etc. are from animals fed non-GM feed exclusively

GM Food on the Irish Market

GM food ingredients authorised for sale in the EU may be marketed in Ireland with appropriate labelling. However, foods labelled as containing GM ingredients are not readily evident in shops and supermarkets in Ireland, a situation similar to most other EU Member States. Checks carried out on behalf of the FSAI have demonstrated that a small proportion of processed foods may contain authorised GM ingredients below the labelling threshold of 0.9% of that ingredient.

Monitoring of GM Food in Ireland

The FSAI monitors food in Ireland to ensure that only EU-authorised GM foods are on the market and that they are labelled appropriately. Results of annual checks for GM foods are available on the FSAI website (https://www.fsai.ie/enforcement_audit/monitoring/surveillance/genetically_modified_food_surveillance.html).

Control of GMOs and Derived Food and Feed in Ireland

In Ireland, GMOs and derived food and feed products are regulated by a number of Government departments and agencies:

- Food Safety Authority of Ireland – Food (enforcement and technical advice)
- Department of Health – Food (policy and legislation)
- Department of Agriculture, Food and the Marine – Feed and Seed (enforcement, policy and legislation)
- Department of Housing, Planning and Local Government – Viable GMOs (policy and legislation)
- Environmental Protection Agency – Viable GMOs (enforcement and technical advice)
- Public Analyst's Laboratory in Cork – (GM food analysis)



Useful links:

Food Safety Authority of Ireland: www.fsai.ie

Department of Agriculture, Food and the Marine: http://www.agriculture.gov.ie/agri-foodindustry/feedingstuffs/geneticallymodifiedfeeds/

Environmental Protection Agency: http://www.epa.ie/licensing/gmo/

European Food Safety Authority: http://www.efsa.europa.eu/

European Commission: https://ec.europa.eu/food/plant/gmo_en

Food Safety
AUTHORITY OF IRELAND

Food Safety Authority of Ireland
The Exchange, George's Dock, IFSC,
Dublin 1, D01 P2V6

T +353 1 817 1300
E info@fsai.ie

Join us on LinkedIn
Follow us on Twitter @FSAIinfo
Say hi on Facebook

www.fsai.ie