



Implementation of GM Food Legislation in Ireland

Pat O'Mahony

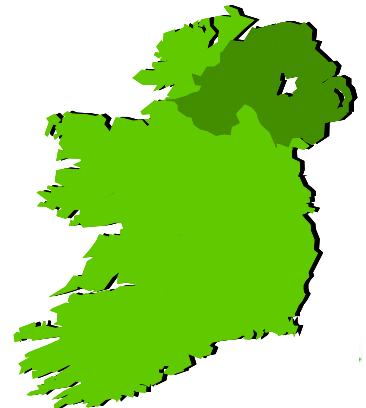


Food Safety Authority of Ireland

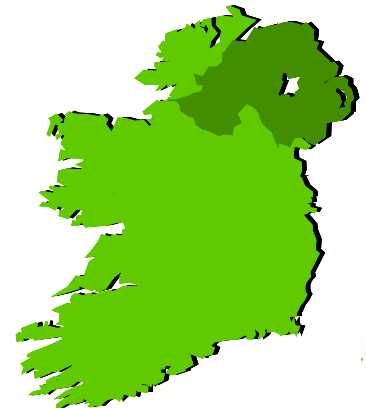
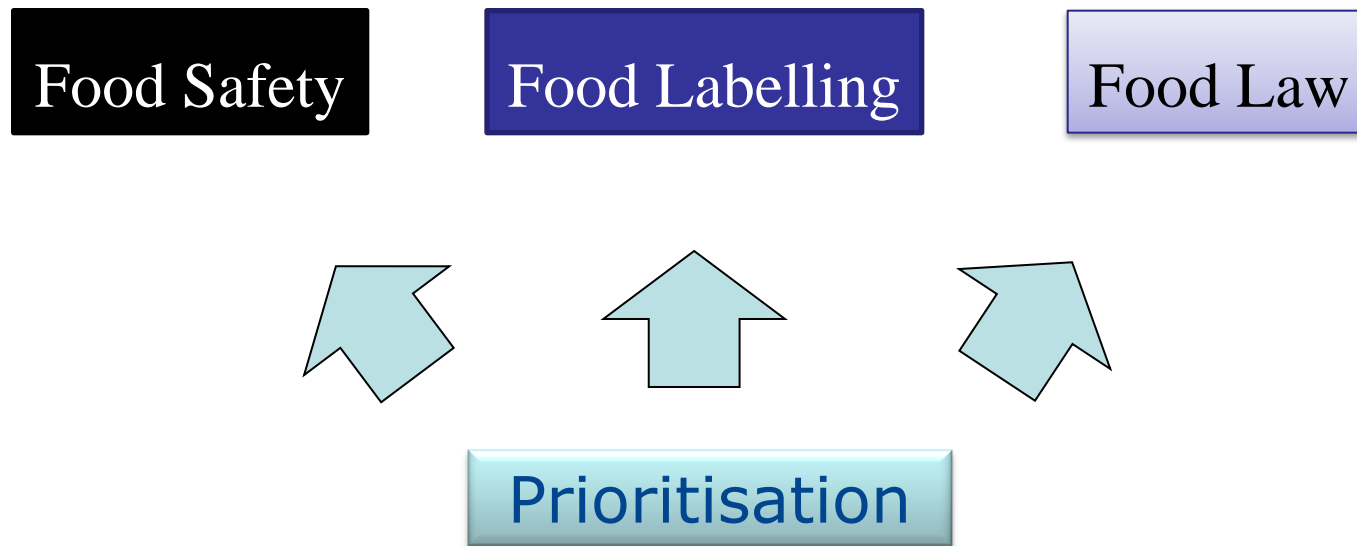
- Government agency responsible for implementing food law
- Not responsible for policy
- Exists since 01 January 1999 - Statutory (FSAI Act of 1998)
- Independent and science - based (*Department of Health*)
- Service contracts - Frontline officers/Official laboratories

Risk Assessors/Managers

Coordinate monitoring and enforcement



Food Safety Authority of Ireland



**GM food authorised in the EU is as safe
as its non-GM counterpart**



http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2945230/

ricin gene - Yahoo! Search Res... Draft genome sequence of t... x

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NIH Public Access
Author Manuscript
Accepted for publication in a peer reviewed journal

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Performing your original search, *ricin gene*, in PMC will retrieve [1967 records](#).

Nat Biotechnol. Author manuscript; available in PMC 2011 March 1.
Published in final edited form as:
[Nat Biotechnol. 2010 September 28\(9\): 951-956.](#)
Published online 2010 August 22. doi: [10.1038/nbt.1674](#)

PMCID: PMC2945230
NIHMSID: NIHMS226448

Draft genome sequence of the ricin-producing oilseed castor bean

[Agnes P. Chan](#),^{1,10} [Jonathan Crabtree](#),^{2,10} [Qi Zhao](#),¹ [Hernan Lorenzi](#),¹ [Joshua Orvis](#),² [Daniela Puiu](#),³ [Admasu Melake-Berhan](#),¹ [Kristine M. Jones](#),² [Julia Redman](#),² [Grace Chen](#),⁴ [Edgar B. Cahoon](#),⁵ [Melaku Gedil](#),⁶ [Mario Stanke](#),⁷ [Brian J. Haas](#),⁸ [Jennifer R. Wortman](#),² [Claire M. Fraser-Liggett](#),² [Jacques Ravel](#),² and [Pablo D. Rabinowicz](#)^{1,2,9}

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Abstract Go to: ☒

Castor bean (*Ricinus communis*) is an oil crop that belongs to the spurge (Euphorbiaceae) family. Its seeds are the source of castor oil, used for the production of high-quality lubricants due to its high proportion of the unusual fatty acid ricinoleic acid. Castor bean seeds also produce ricin, a highly toxic ribosome inactivating protein, making castor bean relevant for biosafety. We report here the 4.6X draft genome sequence of castor bean, representing the first reported Euphorbiaceae genome sequence. Our analysis shows that most key castor oil metabolism genes are single-copy while the ricin gene family is larger than previously thought. Comparative genomics analysis suggests the presence of an ancient hexaploidization event that is conserved across the dicotyledonous lineage.

PubReader format:
click here to try

Formats:
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Related citations in PubMed

Castor bean organelle genome sequencing and worldwide genetic diversity analysis. [PLoS One. 2011]

The multigene family of lysophosphatidate acyltransferase (LPAT)-related enzymes in *Ricinus communis*: cloning an [Plant Sci. 2013]

Exploiting EST databases for the development and characterization of EST-SSR markers in ca. [BMC Plant Biol. 2010]

Final report on the safety assessment of *Ricinus communis* (Castor) Seed Oil, Hydrogenated Castor Oil, G [Int J Toxicol. 2007]

Role of biotechnological interventions in the improvement of castor (*Ricinus communis* L.) and *Jatropha curcas* [Biotechnol Adv. 2008]

[See reviews...](#)
[See all...](#)

Cited by other articles in PMC

Genome Survey Sequencing and Genetic Background Characterization of *Gracilaria lemaneiformis* (Rh. [PLoS ONE.]

Genomic and expression analysis of the flax (*Linum usitatissimum*) family of glycosyl hydrolase 35 q [BMC Genomics.]

Draft Genome Sequence, and a Sequence-Defined Genetic Linkage Map of the Legume Crop Species *Lupinus* a [PLoS ONE.]

Optimizing de novo assembly of short-read RNA-seq data for phylogenomics [BMC Genomics.]

MabsBase: A *Mycobacterium abscessus* Genome and Annotation Database [PLoS ONE.]

[See all...](#)

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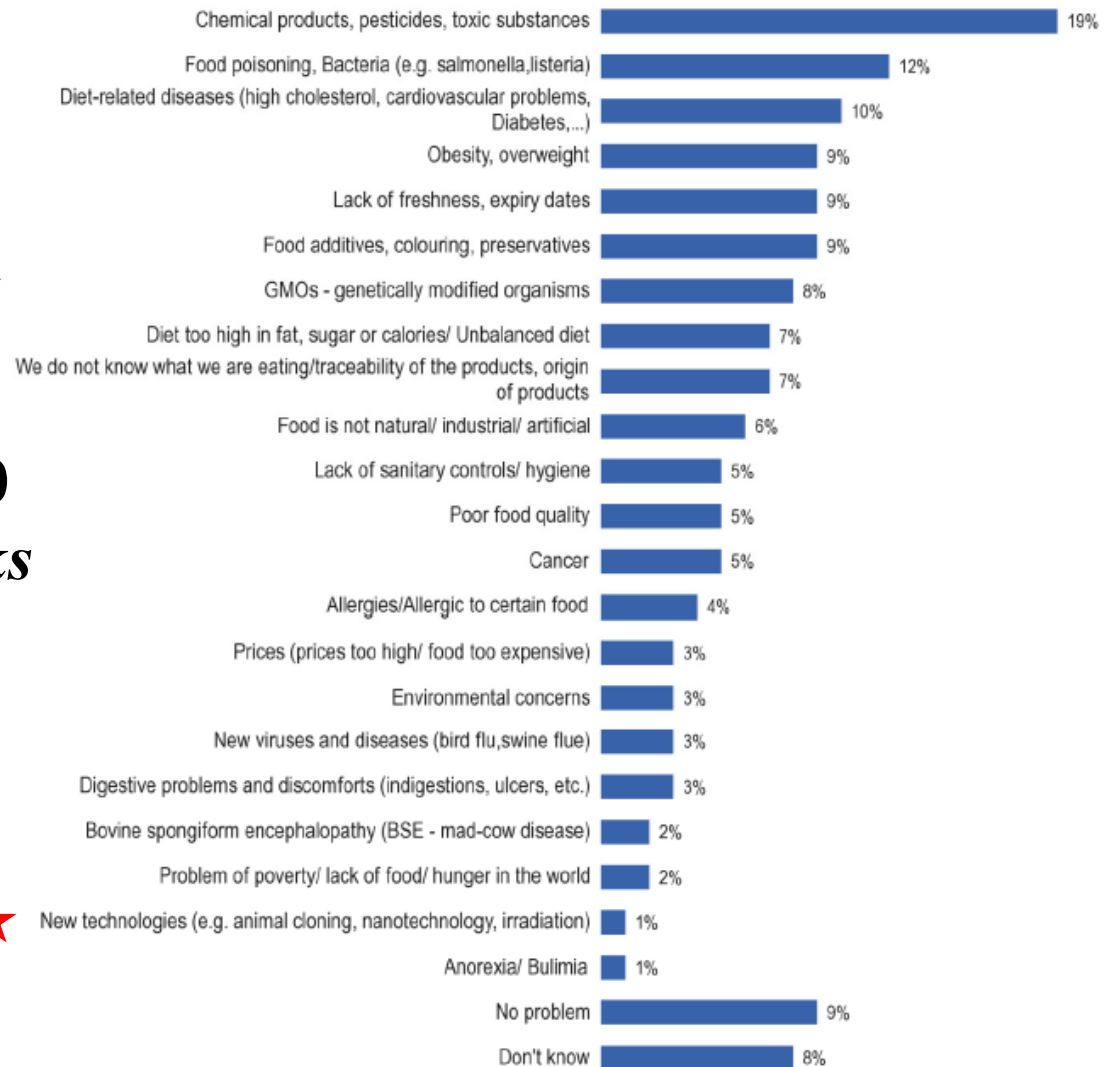
Public Interest in GM Food in Ireland

2007 – 7,749 contacts – 30 related to GMOs – **0.39%**
2008 – 12,013 contacts – 20 related to GMOs – **0.17%**
2009 – 10,155 contacts – 37 related to GMOs – **0.40%**
2010 – 10,901 contacts – 19 related to GMOs – **0.17%**
2011 – 11,170 contacts – 18 related to GMOs – **0.16%**
2012 – 12,083 contacts – 21 related to GMOs – **0.17%**



Graph: 1.3 – Spontaneous responses to problems and risks associated with food

QF3. Could you tell me in your own words, what are all the things that come to your mind when thinking about possible problems or risks associated with food and eating? Just say out loud whatever comes to mind and I will write it down. Anything else?



EU27

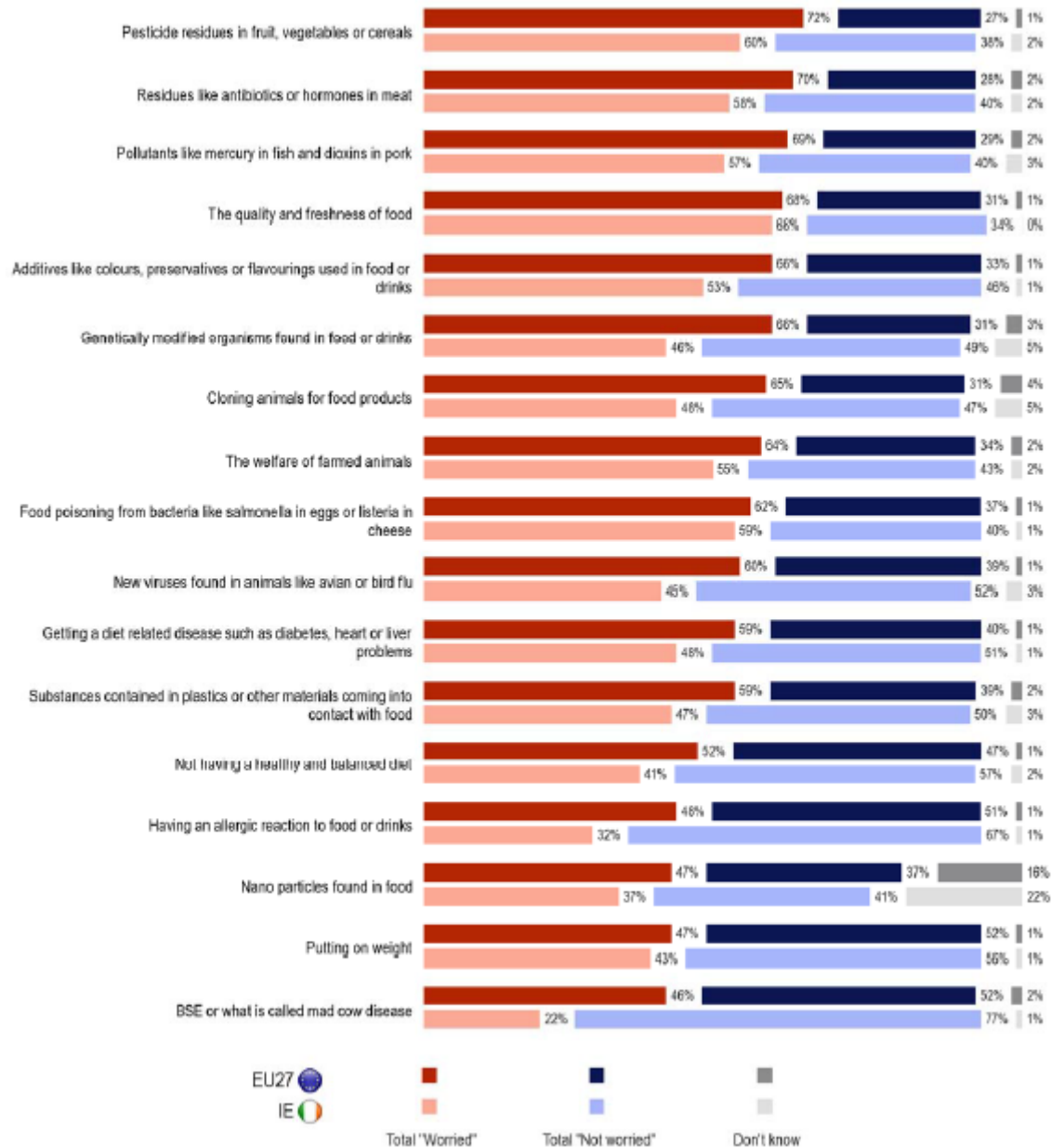


Eurobarometer - 2010

Perception of food risks

Ireland v EU 2010

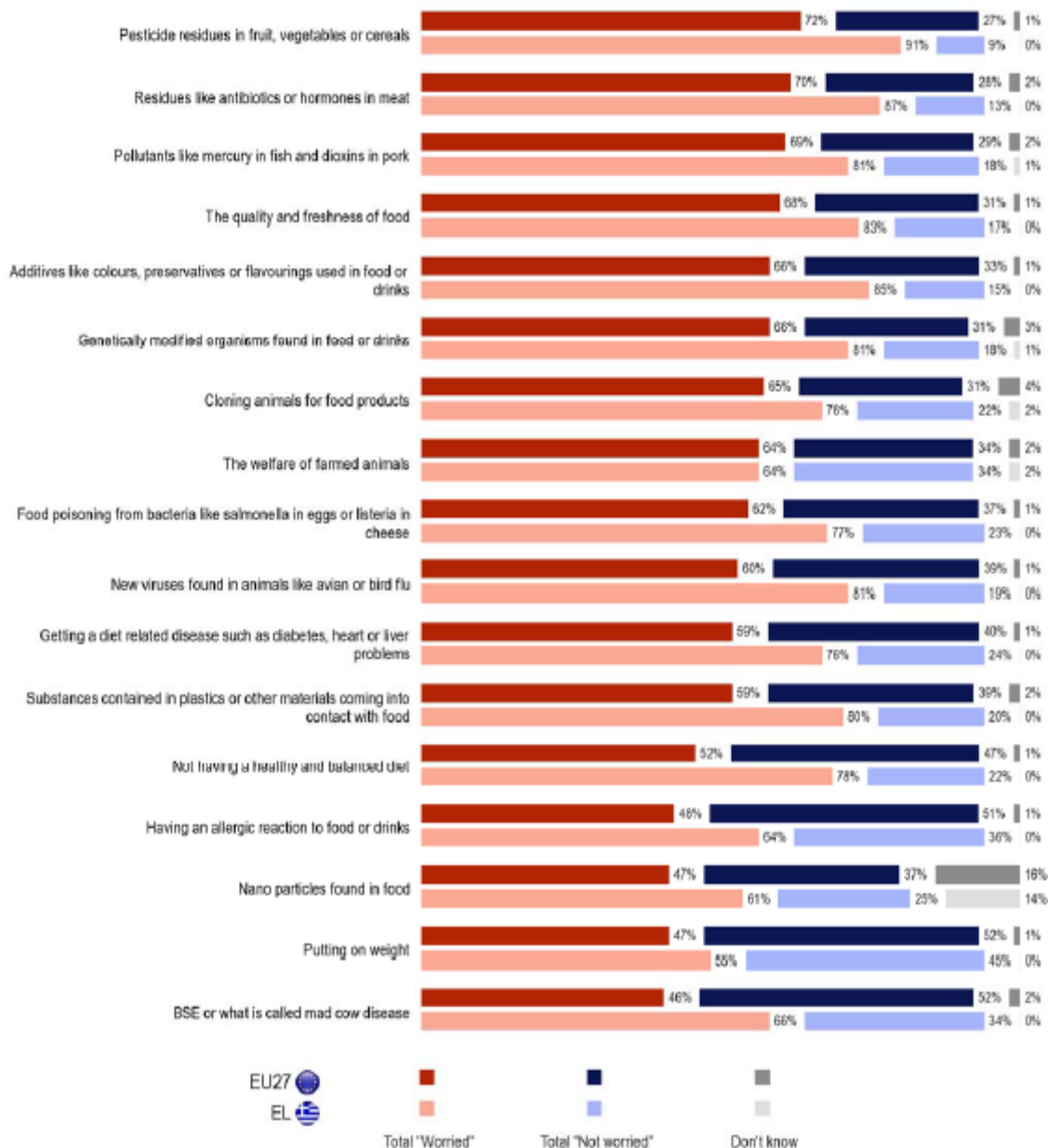
QF4. Please tell me to what extent you are worried or not about the following issues.



Greece v EU 2010

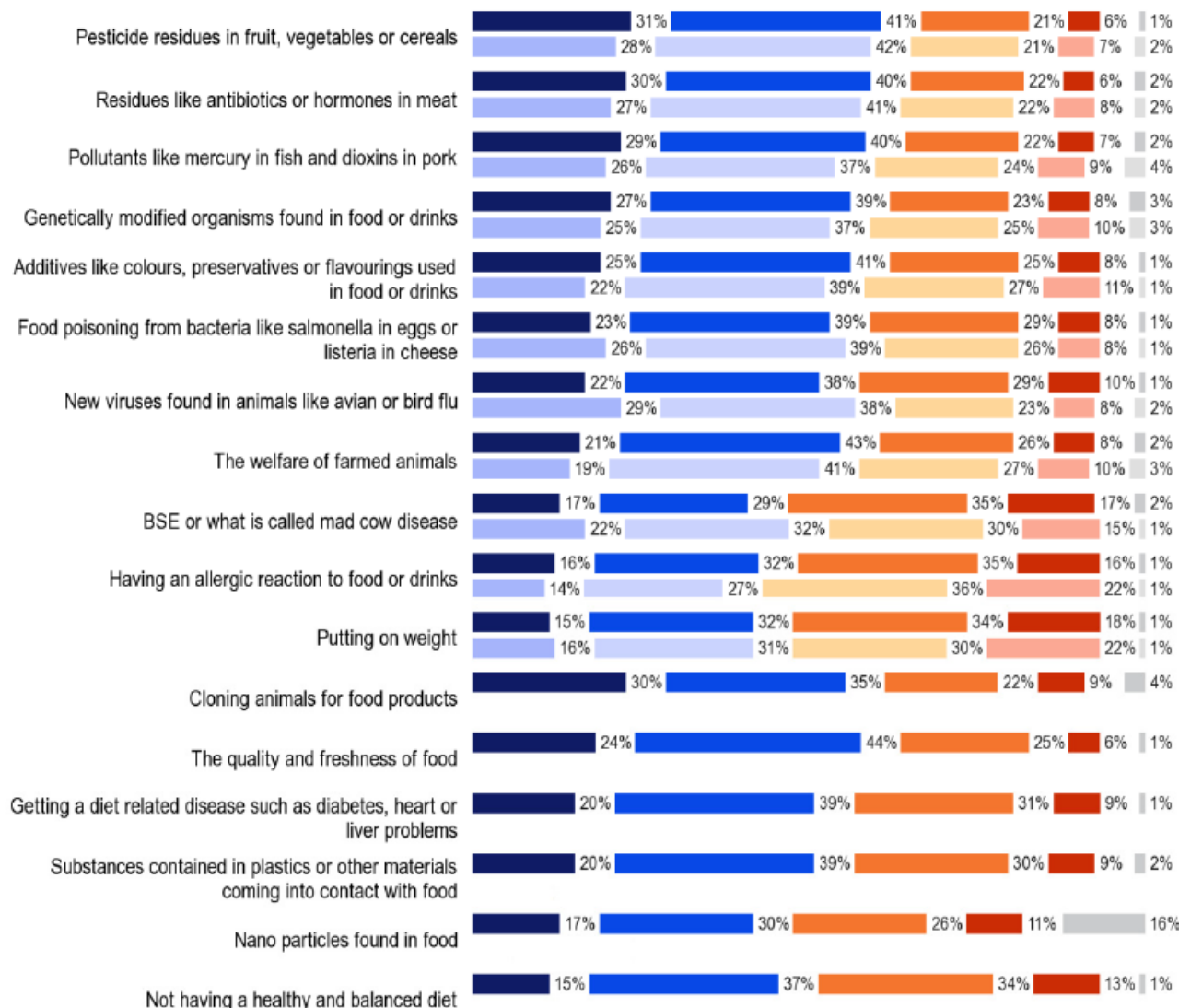


QF4. Please tell me to what extent you are worried or not about the following issues.



Q4: Please tell me to what extent you are worried or not about the following issues.

EU 2005 v 2010



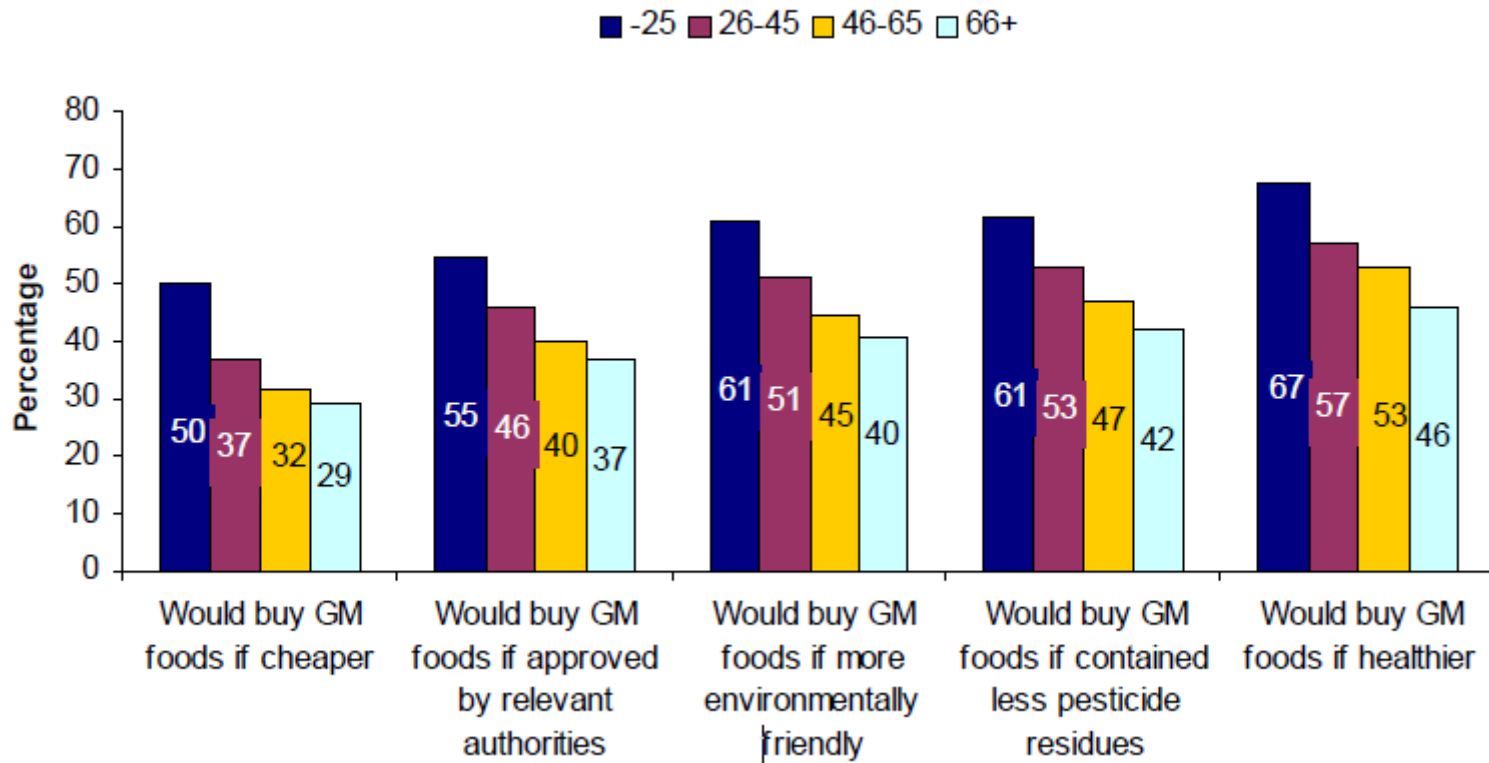
EB73.5 (06/2010)

EB64.1
(09-10/2005)



2005 Eurobarometer study

Figure 37: Age and intentions to purchase GM food



Advances in Food Science & Technology

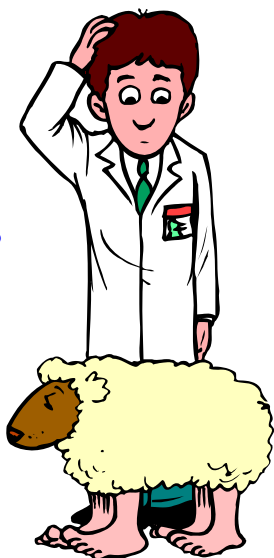
Pasteurisation



Ionising radiation



GMOs



Nanotechnology



Functional Food



Edible packaging



ALLIANCE FOR FOOD SOVEREIGNTY IN AFRICA

New Study Shows GM Genes Can Pass from Food to Human Blood



August 19, 2013 in *Sustainable Agriculture*, by Admin

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A new study shows that contrary to reassurances from industry and regulators, complete genes – including GM genes – can pass from food into human blood.

Source: GM Watch

For many years, the public and scientists have been concerned that GM genes might be incorporated into animal products like meat and milk and consumed by humans.

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The Sinister Monsanto Group: 'Agent Orange' to Genetically Modified Corn

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February 8 2013

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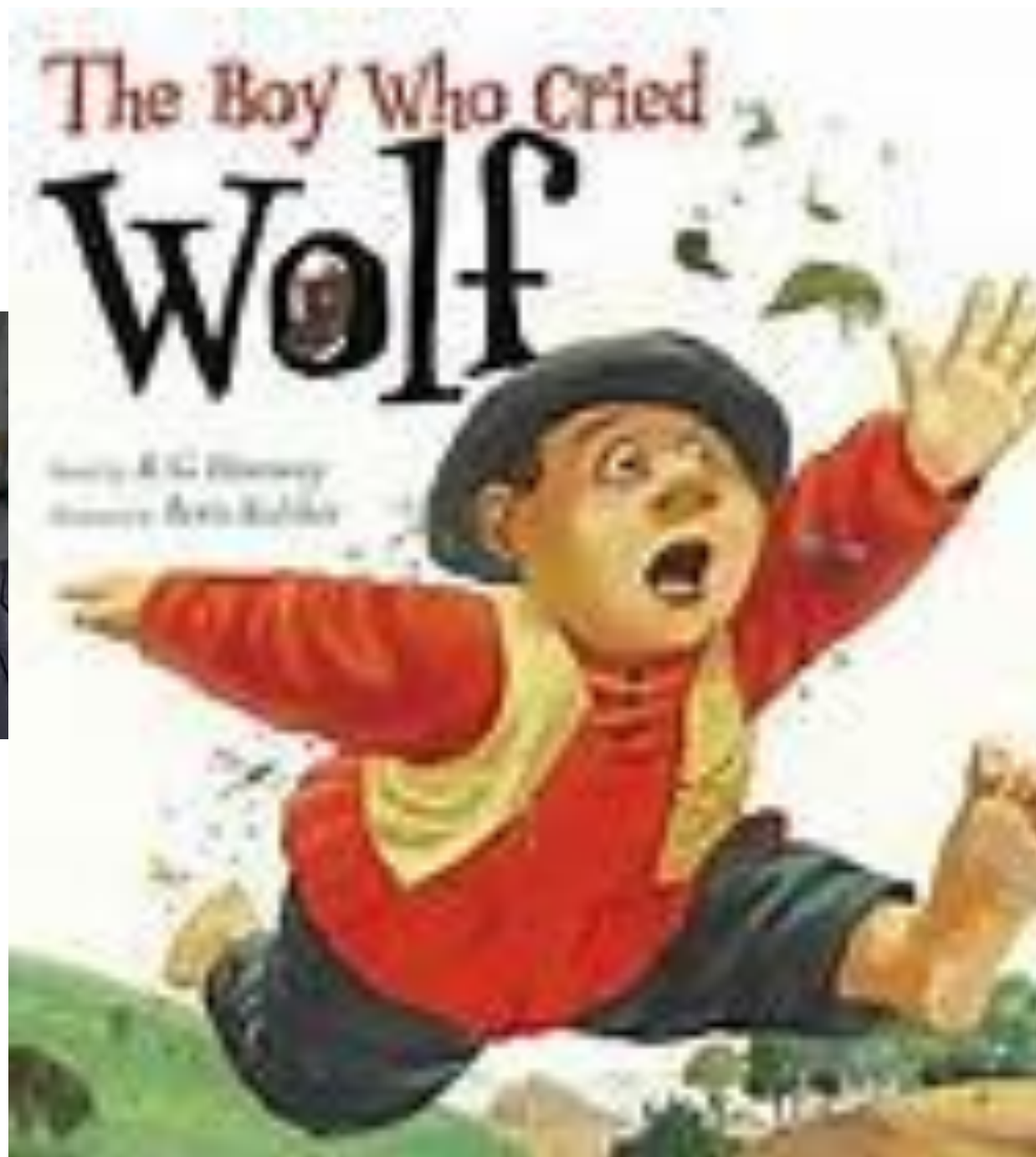


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Review

Assessment of the health impact of GM plant diets in long-term and multigenerational animal feeding trials: A literature review

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Agnès E. Riccroch^b  

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^b AgroParisTech, 16, rue Claude Bernard, 75231, Paris, Cedex 05, France

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^e Le Breuil, 63220 Saint Alyre d'Arlanc, France

^f INRA – Met@risk, AgroParisTech, 16, rue Claude Bernard, 75231 Paris, Cedex 05, France

Abstract

The aim of this systematic review was to collect data concerning the effects of diets containing GM maize, potato, soybean, rice, or triticale on animal health. We examined 12 long-term studies (of more than 90 days, up to 2 years in duration) and 12 multigenerational studies (from 2 to 5 generations). We referenced the 90-day studies on GM feed for which long-term or multigenerational study data were available. Many parameters have been examined using biochemical analyses, histological examination of specific organs, hematology and the detection of transgenic DNA. The statistical findings and methods have been considered from each study. Results from all the 24 studies do not suggest any health hazards and, in general, there were no statistically significant differences within parameters observed. However, some small differences were observed, though these fell within the normal variation range of the considered parameter and thus had no biological or toxicological significance. If required, a 90-day feeding study performed in rodents, according to the OECD Test Guideline, is generally considered sufficient in order to evaluate the health effects of GM feed. The studies reviewed present evidence to show that GM plants are nutritionally equivalent to their non-GM counterparts and can be safely used in food and feed.

The observations of major flaws in some papers highlight the urgent need to improve the reviewing process before publication of papers addressing this subject. This would avoid spreading confusion in the general press, which may not be able to judge the real scientific quality of publications.



The FSAI provides advice to businesses on how to produce safe food

Our Role

The principal function of the Food Safety Authority of Ireland (FSAI) is to take all reasonable steps to ensure that food produced, distributed or marketed in the State meets the highest standards of food safety and hygiene reasonably available. The FSAI aims to ensure that food complies with legal requirements, or where appropriate with recognised codes of good practice.

[Imported Frozen Berries - Outbreak of Hepatitis A Virus](#)

FSAI Advice Line

We operate an advice line on **1890 33 66 77** that provides information and advice on a range of food safety issues.

Latest Food Alerts

There are no recent food alerts

Latest Food Allergen Alerts

[Undeclared Peanut Ingredient in Batches of Rainbow Mixed Nuts](#)

August 29th

Recent News

Sep 9 [FSAI Advises Against Any Further Folic Acid Food Fortification](#)

Sep 8 [Food Safety Authority Reiterates Need to Boil Imported Frozen Berries](#)

Sep 5 [17 Enforcement Orders Served on Food Businesses in August](#)

Make a Complaint



If you're not happy with the standard of hygiene or food that you've

bought in a shop or restaurant you should [make a complaint](#).

See our [Customer Charter](#).

Safe Catering Pack



A user friendly approach to HACCP.

[Buy Now](#)

Frequently Asked Questions



FAQs on a wide range of food safety issues and food legislation.

European Commission

http://ec.europa.eu/food/food/biotechnology/index_en.htm

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Genetically Modified Food and Feed

Genetically modified organisms (GMOs) are organisms, such as plants and animals, whose genetic characteristics are being modified artificially in order to give them a new property. Food and feed which contain or consist of such GMOs, or are produced from GMOs, are called genetically modified (GM) food or feed.

In order to ensure that the development of modern biotechnology, and more specifically of GMOs, takes place in complete safety, the European Union has established a legal framework regulating genetically modified (GM) food and feed in the EU. This framework pursues the global objective of ensuring a high level of protection of human life and health and welfare, environment and consumer interests, whilst ensuring that the internal market works effectively.

[Evaluation of GMO policy in the EU](#)

[Expand All]

More recent developments

- [2011 Monitoring report of Amflora potato cultivation](#)
- [Public hearing on "Environmental monitoring of GM crops"](#)
- [EFSA opinions on applications under the Regulation on GM food and feed](#)
- [Evaluation of the EU legislation on GMOs](#)
- [Hearing on "Socio-economic dimensions of GMO cultivation" - 18 October 2011](#)
- [2010 Monitoring report of MON 810 Maize cultivation](#)
- [Harmonisation of controls for non-authorised GMOs in feed material](#)
- [Commission Decisions on GMOs authorisation](#)

Menu

- What are GMOs
- List of GMOs authorized in the EU
- Rules on GMOs in the EU
 - Introduction
 - Authorisation
 - Labelling
 - Traceability - from production to distribution
 - Reference Laboratories
 - Ban on GMO cultivation
 - Harmonisation of controls
- Evaluation of GMO policy in the EU
- Useful links
- GMOs in a nutshell
- Report and Studies

Print



Resources

- Speeches
- Press Releases
- Health & Consumer Voice Newsletter
- Committees
- Links

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- Codex
- OIE
- WTO
- Import Conditions
- Pets and Animal Welfare
- Enlargement
- Agreements
- EU - Russia: SPS issues

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- > Science and technology policy
- Biotechnology policies**
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>> [Biological resource centres](#)

The OECD is looking into how to encourage and foster innovation which addresses health needs and priorities, maximises access to the benefits, and manages the challenges and risks in a way that is beneficial both to innovators and health systems.

>> [Read more](#)

Reports

[Public Health in an Age of Genomics](#)

[Emerging Trends in Biomedicine and Health Technology Innovation: Addressing the Global Challenge of Alzheimer's](#)

[Biotechnology for the Environment in the Future: Science, Technology and Policy](#)

[Policy Issues for the Development and Use of Biomarkers in Health](#)

[Industrial Biotechnology and Climate Change: Opportunities and Challenges](#)

[The Bioeconomy to 2030: Designing a Policy Agenda](#)

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[Knowledge Networks and Markets in the Life Sciences](#)



[Future Prospects for Industrial Biotechnology](#)



Food and Agriculture
Organization of the
United Nations
for a world without hunger







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- Food safety and quality
- GM Foods Platform
- Browse information by
 - OECD Unique Identifier
 - Commodity
 - Country
- Resources
- FAQ for visitors
- Login

english

Food safety and quality

GM Foods Platform






 share

FAO GM Foods Platform

Welcome to the FAO GM Foods Platform

A platform for all

The FAO GM Foods Platform is a simple online platform to share information on safety assessment of foods derived from recombinant-DNA plants authorized in accordance with the Codex "Guideline for the conduct of food safety assessment of foods derived from recombinant-DNA plants (CAC/GL 45-2003, annex III adopted in 2008)". This Platform also facilitates the effective utilization of food safety assessment in situations of Low Level Presence (LLP) of r-DNA plant materials in food.

How it works

The FAO GM Foods Platform is freely accessible for those who want to browse the information. Registration is required for those who need to upload information. Only officially nominated Focal Points can register to the Platform.

One Focal Point per Codex Member is officially nominated by the respective country through its Codex Contact Point. The nominated Focal Point is then invited to register to the Platform. Once his/her registration has been approved, the Focal Point can start uploading the relevant national data and information to the Platform. All the entries will be reviewed by FAO before they will be online.

Please note: the FAO GM Foods Platform was officially launched on 1 July 2013 and the database will gradually expand as Member countries upload their information over the coming weeks and months.

The launching event was convened on 1 July 2013 at FAO headquarters in Rome, Italy. Meeting report is [available for download](#) and some photos of the event can be viewed [here](#).

Start browsing

GM Food/Feed Authorisation

Regulation EC No 1829/2003



Country	Population		Votes	Country	Population		Votes
Germany	82m	16.7%	29	Austria	8.3m	1.7%	10
France	63m	12.8%	29	Bulgaria	7.7m	1.6%	10
UK	60m	12.3%	29	Denmark	5.4m	1.1%	7
Italy	59m	11.9%	29	Slovakia	5.4m	1.1%	7
Spain	44m	8.9%	27	Finland	5.3m	1.1%	7
Poland	38m	7.7%	27	Ireland ★	4.2m	0.9%	7
Romania	22m	4.4%	14	Lithuania	3.4m	0.7%	7
Netherlands	16m	3.3%	13	Latvia	2.3m	0.5%	4
Greece	11m	2.3%	12	Slovenia	2.0m	0.4%	4
Portugal	11m	2.1%	12	Estonia	1.3m	0.3%	4
Belgium	11m	2.1%	12	Cyprus	0.77m	0.2%	4
Czech Rep.	10m	2.1%	12	Luxembourg	0.46m	0.1%	4
Hungary	10m	2.0%	12	Malta	0.40m	0.1%	3
Sweden	9.0m	1.8%	10	EU	493m	100%	345

Since 1st November 2004, a qualified majority is reached if the following two conditions are met:

- a majority of member states approve (in some cases two-thirds);
- a minimum of 255 votes is cast in favour of the proposal, (73.9 %).

In addition, a member state may ask for confirmation that the votes in favour represent at least 62% of the total population of the Union. If this is found not to be the case, the decision will not be adopted.



GM Food & Feed Ingredients Authorised in the EU

(27) Maize

(8) Cotton seed

(7) Soya

(3) Oilseed rape

(1) Sugar beet

(1) Potato

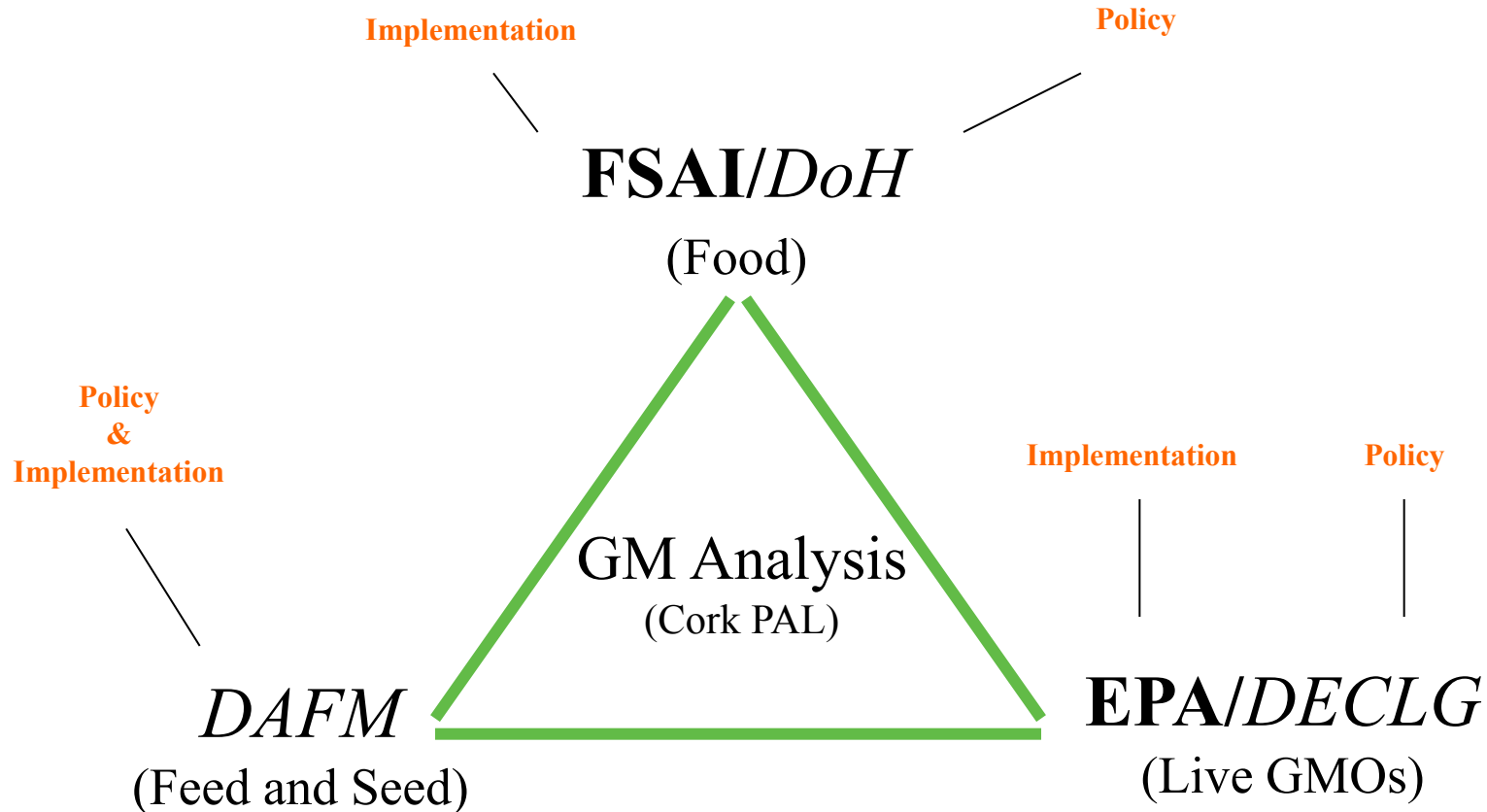
(1) Bacterial product

(1) Yeast product

Total = 49 (October, 2013)



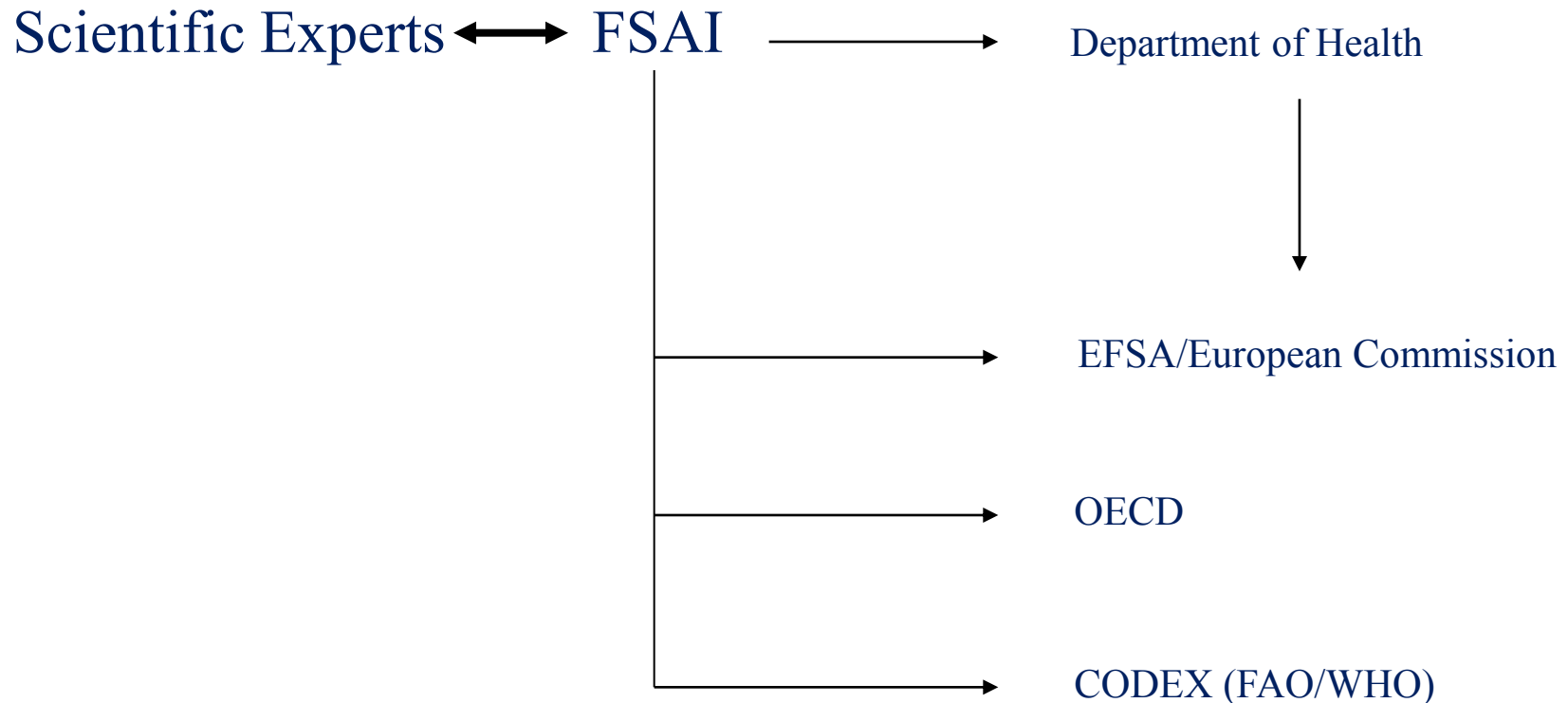
GMO Regulation in Ireland



Meet annually



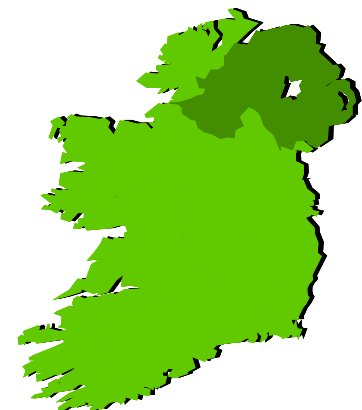
FSAI – Competent Authority for GM Food



GM Food in Ireland - 2012

Foods containing Maize				Levels	Foods containing Soya				Levels
1	Popcorn	-	-	-	1	Soya Milk	-	-	-
2	Popcorn	-	-	-	2	Soya Milk	-	-	-
3	Popcorn	-	-	-	3	Soya Drink	-	-	-
4	Popcorn	-	-	-	4	Soya Yoghurt	-	-	-
5	Popcorn	-	-	-	5	Soya Cream	-	-	-
6	Popcorn	-	-	-	6	Soya Chocolate Dessert	-	-	-
7	Popcorn	-	-	-	7	Organic Tofu	MON 40-3-12	<0.1%	<0.1%
8	Salted Popcorn	Bt11	<0.1%	<0.1%	8	Tofu	MON 40-3-12	<0.1%	<0.1%
9	Toffee Popcorn	-	-	-	9	Tofu	-	-	-
10	Popcorn unpopped	MON 810	<0.1%	<0.1%	10	Brown Rice	-	-	-
11	Popcorn unpopped	-	-	-	11	Rice Flakes	-	-	-
12	Microwave Popcorn	-	-	-	12	Tortilla Chips	MON 40-3-12	NQ*	
13	Salted Microwave Popcorn	BT11	<0.1%	<0.1%					
14	Yellow Corn	Bt176	<0.1%	<0.1%	Foods containing Rice				Levels
15	Corn on the cob	-	-	-					
16	Ground Corn	MON 810	<0.1%	<0.1%	1	Rice Flour	-	-	-
17	Organic Cornflakes	-	-	-	2	Rice Pudding	-	-	-
18	Cornflour	-	-	-	3	Rice Vermicelli	-	-	-
19	Cornflour	-	-	-	4	Noodles	-	-	-
20	Cornflour	-	-	-					
21	Corn Cakes	-	-	-					
22	Corn Cakes	-	-	-					
23	Tortilla Chips	-	-	-					
24	Tortilla Chips	-	-	-					
25	Tortilla Chips	-	-	-					
26	Tortilla Chips	-	-	-					
27	Nachos	MON 810	<0.1%	<0.1%					
28	Organic Polenta	-	-	-					
29	Polenta	-	-	-					
30	Jelly Beans	-	-	-					

*NO – not quantified



Globalisation of Trade

"The World on your Plate"



Chicken Kiev

Salted butter - Ireland
garlic puree - China, USA, Spain
garlic salt - China, USA, Spain
lemon - USA
Herb Butter : **parsley** - France, UK
pepper - Indonesia
water - Ireland

Chicken Breast: **Chicken** - Ireland, Belgium
UK, France etc.

Batter: **Flour** - Belgium, France
Water - Ireland

Bread Crumb: **Bread crumb** - Ireland, UK
Rape-seed oil - EU, Australia
Eastern Europe

EU GM Food Labelling

Regulation EC No. 1829/2003

Section 2

Labelling

Article 12

Scope

1. This Section shall apply to foods which are to be delivered as such to the final consumer or mass caterers in the Community and which:

- (a) contain or consist of GMOs; or
- (b) are produced from or contain ingredients produced from GMOs.



GM Labelling Issues

1. Labelling threshold where a food or ingredient consists of or contains more than 0.9% GMO (**regardless of DNA or protein presence**)
2. $\leq 0.9\%$ threshold for adventitious or technically unavoidable GMO
3. Mass caterers not required to label GM ingredients (except e.g. UK)
4. GM labelling not required for processing aids (e.g. GM chymosin)
5. Fermentation products where the GMM is not present in the final product (riboflavin)



COMMISSION DECISION

of 22 April 2009

authorising the placing on the market of Ice Structuring Protein type III HPLC 12 as a novel food ingredient under Regulation (EC) No 258/97 of the European Parliament and of the Council

(notified under document number C(2009) 2929)

(Only the English text is authentic)

(2009/344/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

- (5) Within the 60-day period laid down in Article 6(4) of Regulation (EC) No 258/97 reasoned objections to the marketing of the product were raised in accordance with that provision.

Having regard to the Treaty establishing the European Community,

(2) The Ice Structuring Protein (ISP) type III HPLC 12 is produced using a genetically modified yeast as a processing aid. Pursuant to recital 16 of Regulation (EC) No 1829/2003 of the European Parliament and of the Council (2), food and feed which are manufactured with the help of a genetically modified processing aid are not included in the scope of that Regulation.



EU Food Labelling

- Organic v GM rules
- Food from animals fed with GM feed is not considered “GM”
- “GM - free” products not allowed any GM content
- “GM - free” labelled milk not allowed (General labelling legislation)
- “Milk from a cow fed non-GM feed” is allowed where verifiable

Watching Brief

- EFSA integrity
- Science credibility
- Authorisation process / Member State bans
- Inappropriate/immoral reference to serious medical conditions (diabetes, allergies, cancers, autism....)
- Disruption tactics (GM pollen in honey)
- Cloning v GM
- UK retailers dropping ban on GM fed chickens
- Biopharmaceuticals
- Commission 2 year chronic toxicity study in rats
- GM developments in non-EU countries



GM Animals



- **Enviropigs**

*Express phytase in their saliva
and excrete ~ 75% less
Phosphorous*



- **GM salmon**

Grow 3 times faster



- **GM goats**

*Spider silk in goats milk
Anti-thrombin in goats milk*



- **GM cow**

*Increased casein in milk
improving cheese production*

