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Something fishy: the facts on GM animals

The European Commission's rush to approve genetically modified animals

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1. Introduction

Nowhere in the world is any genetically modified (GM) animal authorised for food production. In parts of the world where research on GM animals for food purposes has been done, tests have been largely unsuccessful and abandoned (for example the GM pig in Canada). The market response is unanimous: clear rejection. European consumers are highly concerned about the prospect of GM animals.

Yet, in contradiction to these facts the European Commission is preparing the legal framework to start the authorisation of GM animals and their food products.

2. What are GM animals?

GM animals means animals produced by a genetic manipulation of the animal. So far, GM animals in most countries in Europe have been mainly laboratory animals for medical research or pharmaceutical applications (for example GM animals designed to produce pharmaceuticals in their milk).¹ However, corporations and scientists have also been working on genetically modifying animals to produce foods for human consumption, so far with little success.

3. Situation in European Union

Legal situation

The EU's legal framework for genetically modified organisms (GMOs) covers all organisms whether they be GM food, feed, plants or GM animals. Currently GM animals and products derived from GM animals are not authorised or marketed in the EU, and research on GM animals for food is not taking place in any EU member state.²

¹ Henard, M et al. (2011). Agricultural Biotechnology Annual.
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Biotechnology%20Annual_Paris_EU-27_7-15-2011.pdf

² Henard, M et al. (2011). Agricultural Biotechnology Annual.
http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Biotechnology%20Annual_Paris_EU-27_7-15-2011.pdf

Surprisingly, in 2010 the European Commission asked the European Food Safety Authority (EFSA), which is the responsible agency, to formulate guidelines for GM animals and it agreed to formulate two separate sets of safety guidelines to assess GM animals. These are:

- Safety of food and feed derived from GM animals and related animal health and welfare aspects (launched in February 2012)³
- Safety of releasing GM animals bred for food and feed purposes into the environment (draft just published⁴)

Denmark, Netherlands and Sweden have separate rules to deal with animal biotechnology.

Consumer attitudes

Studies consistently show that the majority of EU citizens are concerned about GM foods. In the 2010 Eurobarometer survey, 66 per cent of European citizens said they were concerned about GM food (Eurobarometer 354, 2010⁵).

Importantly, cloning can be used during the production of genetically engineered animals. Public concern about food derived from cloned animals is even higher than for GM food. 84 per cent of EU citizens were concerned that the EU did not know enough about the long-term health and safety effects of using cloned animals for food (Eurobarometer 238, 2008⁶).

These clear concerns amongst European citizens about GM food must be addressed before the European Union begins any process to consider the approval of such foods derived from GM animals, either imported or produced within the EU.

Civil society concerns

On 27th January 2012 civil society groups wrote to several EU Commissioners to demand that *“the drafting of technical guidance stops until a broad assessment with all stakeholders has taken place to decide whether or not food products derived from GM animals are wanted within the European Union.”*

The European Commission Directorate General Health and Consumers' response was to ignore the concerns raised and simply confirm that the EFSA is working on technical guidance documents. The Directorate did not mention any broader assessment, or even an evaluation of whether there is any need or use for GM animals in Europe.

The Directorate General Health and Consumers said organisations could participate in the EFSA consultations. *“The finalisation of the EFSA guidance on the environmental release of GM animals is expected for 2012. As usual, a public consultation on the draft document(s) is foreseen.”*

³ Genetically Modified Animals, EFSA.(2012) <http://www.efsa.europa.eu/en/supporting/pub/226e.htm>

⁴ <http://www.efsa.europa.eu/en/consultations/call/120621.htm>

⁵ <http://www.efsa.europa.eu/en/factsheet/docs/reporten.pdf>

⁶ http://ec.europa.eu/public_opinion/flash/fl_238_en.pdf

Considering that there is no demand for GM animals it raises questions why the Commission is so keen to proceed with agreeing a process to give their approval.

4. Supermarket rejection

At the beginning of 2012 Friends of the Earth Europe contacted the leading European supermarkets about their readiness to sell GM animals or products derived from them. The responses were clear: Europe's major retailers have no plans to sell any GM animal product.

Some supermarkets have policies in place that exclude the use of any GM labeled product at all stages of production. This covers products and derivatives from GM animals which must be labeled under Article 12 of EU regulation 1829/2003.

Here are extracts of responses to the question, 'If available and authorised in the European Union, would you sell products derived from genetically modified animals, such as milk from GM cows, meat from GM pigs or GM fish?' obtained this year by Friends of the Earth Europe from major supermarket chains:

Aldi:

"For some time, we demand in our contracts with all our suppliers to avoid GM materials or GM additives in the food production. This includes all steps of the production and all ingredients."

Edeka:

"We exclude explicitly for our own brands the use of any GM labeled ingredients. Similar conditions are contractually defined for other food brand products."

Marks & Spencer:

"Regarding GM animals...we are not active in this space at all and have no plans to be."

Morrisons:

"We have absolutely no plans to sell meat (or other products) from GM animals."

Tesco:

"We do not stock, and have no plans to sell GM animals or derivatives of GM animals in our stores."

Sainsbury's

"Whether Sainsbury's would sell products derived from them such as milk, meat or fishthis remains against our current policy."

5. Situation in Third Countries (US, Canada, Australia/New Zealand)

Despite decades of research, across the globe there are only two GM animals that have reached any advanced stage of development. These are a GM salmon with the trade name AquAdvantage Salmon, and a GM pig with the trade name Enviropig.

Research on different GM animals is underway in laboratories in various countries. For instance, research on GM chickens that will not transmit bird-flu, and cows which are immune to mad cow disease. However, all these are in very early stages of research.

GM Salmon in the US

A GM salmon, the first of its kind, has been created by the company AquaBounty Technologies Inc. in the United States. It has been modified with a growth hormone gene from the Chinook salmon and another gene from the Ocean pout (an Atlantic eel that can withstand freezing waters) which promotes the growth hormone. According to the company this will enable the GM salmon to grow at double the rate of the normal Atlantic salmon.⁷

These claims are dismissed by independent scientists and public interest groups which have identified environmental, human health and economic problems with GM salmon. It is feared that the approval and production of GM salmon could destroy the commercial salmon fishing industry, in addition to decimating the already threatened wild salmon populations.⁸ Researchers claim that the introduction of GM salmon could lead to the extinction of the wild population in less than 40 fish generations.

AquaBounty Technologies sought approval for the GM salmon at the Food and Drug Administration (FDA), the US regulatory authority for GM animals, in August 2009. 30 congressmen and 14 senators wrote to President Obama expressing concerns about the GM salmon and the approval process followed by FDA, which does not include provisions for evaluating genetically engineered animals⁹. Numerous bills were introduced in the Senate and Congress seeking to ban GM salmon, or to label it if approved.^{10 11}

European salmon farmers and breeders are worried that the approval of GM salmon would be detrimental for existing salmon producers. They expect a sharp fall in prices if GM salmon is introduced.¹²

In September 2010 the FDA ruled the GM salmon safe for human consumption and judged that it would not have any significant impact on the environment. The FDA opinion attracted over 400,000 comments from the public opposing the 'frankenfish' or demanding labelling of the GM salmon.¹³

As a result the GM salmon has not yet been authorized.

⁷ Sharratt, L (2010). Biotech gets fishy with GE salmon. <http://www.cban.ca/Resources/Topics/GE-Fish/Biotech-Gets-Fishy-with-GE-Salmon2>

⁸ ibid

⁹ Congress Unites Against FDA Approval of Genetically Engineered Salmon (2011).

<http://www.foodandwaterwatch.org/pressreleases/congress-unites-against-fda-approval-of-genetically-engineered-salmon/>

¹⁰ Huffman, J (2012). Govt. should not be subsidizing GE salmon. http://www.times-standard.com/guest_opinion/ci_19591609

¹¹ Bottemiller, H. (2011). Senators introduce bill to ban GE Salmon.

<http://www.foodsafetynews.com/2011/02/senators-introduce-bill-to-ban-genetically-engineered-salmon/>

¹² Gibbs, Walter. April 22, 2011. Europe scorns Super-salmon as GM battle widens.

<http://www.reuters.com/article/2011/04/22/us-food-salmon-idUSTRE73L1AA20110422>

¹³ Environmental Groups Petition Federal Government to Complete Full and Transparent Review of Environmental Impacts Associated with "Frankenfish" (2011).

<http://www.centerforfoodsafety.org/2011/05/26/environmental-groups-petition-federal-government-to-complete-full-and-transparent-review-of-environmental-impacts-associated-with-%E2%80%9Cfrankenfish%E2%80%9D/>

GM pig, the 'Enviropig', in Canada

Researchers from the University of Guelph, Canada, have developed a GM pig that is designed to digest phosphorous more efficiently.¹⁴ Large pig factory farms produce manure containing phosphorous. Normally this can be a useful input for farms, but industrial scale farms mean it has become a major source of pollution of land and water near factory farms. The GM pig is designed to digest phosphorous more efficiently and GM pigs would produce faeces with lower phosphorous content.¹⁵

The GM pig has triggered intense debate in Canada. Many swine breeders are worried that if approved and released to the market, the Enviropig could affect their business drastically.^{16 17 18} Consumers and environmental groups have objected to the GM pig and called for an outright ban. They emphasise that a feed additive called 'phytase supplement', has already been in use for 10 years to deal with the problem of excessive phosphorous in swine waste.

On 2nd April 2012 the University of Guelph closed its research into the GM pig after the swine industry group Ontario Pork redirected its funding away from genetically modified pig research. Without this funding, the university is ending its breeding program of GM pigs.¹⁹

Australia

Currently in Australia minor research into GM sheep and chicken is taking place. No GM animal is close to approval.

New Zealand

The only significant GM animal research taking place in New Zealand is by AgResearch, a research company owned by the state. No research or authorization for GM animals for food purposes is pending.^{20 21} A poll carried out with 1000 respondents in 2008 found

¹⁴ Canadian Biotechnology Action Network. (2010). "Enviropig" background.

<http://www.cban.ca/Resources/Topics/Enviropig/Enviropig-Background>

¹⁵ ibid

¹⁶ Visser, J. (2010). Could Canadian-made Enviropiggy get to market?

<http://www.ctv.ca/CTVNews/SciTech/20100923/enviro-pig-100925/>

¹⁷ Mann, S. (2011). Processor says no to Enviropig. <http://www.betterfarming.com/online-news/processor-says-no-enviropig-4011>

¹⁸ Miner, J. (2011). Messing with Nature.

<http://www.lfpress.com/news/london/2011/06/21/18316276.html#/news/london/2011/06/21/pf-18316276.html>

¹⁹ Yorkshire Post, 14 April 2012 'Pioneer GM pigs now face the end of the line '

<http://www.yorkshirepost.co.uk/news/country-view/farming/pioneer-gm-pigs-now-face-the-end-of-the-line-1-4447140#>

²⁰ Lee-Jones, D (2011). New Zealand Agriculture Biotechnology Annual Report (GAIN).

http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Agricultural%20Biotechnology%20Annual_Wellington_New%20Zealand_7-15-2011.pdf

²¹ ERMA New Zealand. (2008). ERMA New Zealand Evaluation and Review Report.

<http://www.gefree.org.nz/assets/doc/GE-breaches/GM-animals-E-and-R-report-1.pdf>

that only 27 per cent of New Zealanders and only 28 per cent of farmers supported GM animals.²²

Conclusion

Since there are major consumer concerns, and only one type of GM fish in the USA that is anywhere near commercialisation, it is surprising that the European Commission is setting up a process to approve the use of GM animals. With virtually complete market rejection in the EU of genetically modified plants, it is hard to imagine any public support for GM animals or products derived from them. The Commission's ambivalent response to concerns from civic society organisations indicates that they have not learnt any lessons from the failed introduction of GM plants.

The European Commission should:

- conduct a full cost-benefit analysis and a long term sustainability assessment as outlined in Directive 2001/18
- facilitate a meaningful and transparent public debate to ascertain the societal need for such products
- based on the results, determine the need for guidance from EFSA and the European Commission, to identify potential risks and hazards and adequate scientific methods for risk assessment
- use the results of these assessments to inform the next steps for a decision on whether to permit or not the further development of GM animals.

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²² Soil & health Association of New Zealand (2008). Kiwi poll rejects GE animals. <http://www.organicnz.org/soil-and-health-press/1007/kiwi-poll-rejects-ge-animals/>



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