

GMOs: Genetically Modified Organisms

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1. General Information about GMOs

- genetically modified organism
 - aka genetically engineered, genetic manipulation, transgenic, recombinant DNA technology
- an organism that has the genes of another unrelated organism
- artificial technique that transfers a gene from one organism to another
- mostly created for food (seeds, Table 2.4) or medical reasons (GM vaccines)
- usually for what is thought to be beneficial characteristics (Table 2.1)
- big part of industry R&D (Table 2.3)
- often compared to traditional cross breeding

2. Benefits

- Crops: better taste and quality; resistance to herbicides, insects, diseases, weather; increased yields, lasts longer
- Animals: increased yields of milk, meat, eggs; resistance to disease
- Society: reduce world hunger
- Environment: prevents soil erosion, conservation of water

3. Health Concerns and Risks in GMOs

- Random insertion of genes – The gene location in chromosomes aren't pre-determined but rather are random through the use of restriction enzymes, thus making the process unpredictable.
- Lack of normal control – genes are controlled by promoters and repressors present within their native cell and thus when inserted into a new cell, gene expression will be difficult to control in new organisms.
- Genes have multiple functions – the one gene-one protein theory no longer is valid with the discovery of new functions of genes, thus to insert genes into other organisms could result in unwanted side effects.
- Unknown allergens – the use of GMOs can result in unknown or unwanted allergens and allergic reactions.

4. Environmental concerns:

- Overuse of herbicides – By making crops resistant to herbicides, farmers use more herbicides which can result in unwanted side effects with improper treatment as well as more resistant plants and bacteria due to overuse.
- Contamination of surrounding areas – Due to the use of herbicides there might be unwanted contamination, an example of a negative externality.
- Decrease in biodiversity – the use of genetic engineering might result in the lack of the use of different types of crops and might phase out regular wild type crops. Wild type strains are also lost through horizontal gene transfer
- Overuse of land, destruction of habitats, and changing of ecosystems due to new form of agriculture.
- Emergence of herbicide and toxin resistant pests and weeds

5. Health studies and witnessed effects in the general population

- Flavr Savr Tomato – resulted in lesions in rats. Considered “mild” by company and 7 of the 40 rats died within a fortnight. Still approved in the US
- GM potatoes – lesions found in rats due to the insertion of lectin gene. Regular potatoes and lectins alone don’t have ill effects.
- L-tryptophan – GM food supplement caused many disabilities and deaths in the US, because of unidentified toxins.
- UK – soya allergies rose by 50% in 1999 when imports of GM soya started.

6. The Dispute

- 1998-2003 EU didn’t approve any new GMOs because they were held up in the approval process which caused the US, Canada and Argentina to file a dispute with a WTO in May 2003.

7. US/Canada/Argentina Position

- The EC’s de facto moratorium on GM products is in violation of GATT Article III on national treatment.
 - GMOs are *like products* in the terms of GATT
- The only WTO provision the EC could invoke is the Sanitary and Phyto-Sanitary (SPS) Agreement
 - SPS requires risk assessments – the only ones they have are the *favorable* reports of their own committees.
 - SPS is about *known risk – probability* rather than *possibility* of harm. Not even possibility has been firmly established
- EC’s claims to be following the precautionary principle are disingenuous.
 - All products undergo vigorous scrutiny prior market release.
 - Every new tech carries implicit risks. We often choose to accept them.
- This is not a trade or legal issue, it’s an issue of policy, and as such, the WTO is the wrong forum to address these grievances.
- Broader economic impacts.
 - Countries imposing this ban are hurting themselves economically as our output outpaces theirs.
 - They are also hurting developing countries by preventing import from them and by discouraging their uptake of necessary technologies.

8. The EC argument:

- There has not been a de-facto moratorium since 1998.
 - GMO’s looked at on case by case basis; EC admits that they take longer on GMO approval but only because many factors are not known about them so additional information must be compiled to make a good decision, this takes extra time.
- EC contends that GM products are not equal to their non-GM counterparts
 - Not enough scientific evidence to support claim that GM products are the same as non-GM products.
 - Until this is proven otherwise, EC should be able to investigate the health and environmental risks of GM products as it sees fit.
- No violation of National Treatment

- Because GM products are different and GM products are not produced in Europe there is not domestic industry in Europe of GM's to substantiate the claim that imported GM products are treated less favorably than domestic ones given that there aren't any.
- The SPS clause of WTO is not a sufficient means to settle this issue
 - SPS does look for a *probable* threat however the threats that the SPS takes into account do not include changes in ecological balance or antibiotic resistance; two threats that GMO's may pose whose severity are unknown to the international community.
 - Because SPS doesn't cover these unknown issues relating to GM products it is not a qualified tool to settle the dispute.

Conclusion: EC evokes the precautionary principle in assessing the situation; "*When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause-and-effect relationships are not fully established scientifically.*"¹

9. Current Status

- During the WTO dispute, the EU has approved certain GM foods because of pressure from other countries and corporations.
- on May, 25th 2004, campaigners delivered a petition to the WTO signed by more than 100,000 citizens from 90 countries and more than 544 organizations representing 48 million people. The Petition called upon the WTO to not undermine the right of the European Union and others to protect their citizens and the environment from GMO food and farming.
- There is an ongoing debate concerning the labeling of GM foods and whether it constitutes a trade barrier or simply an avenue to more perfect consumer information.
- The WTO's final decision came out on September 29, 2006 finding in favor of the US, Canada and Argentina.

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¹ From the January 1998 Wingspread Statement on the Precautionary Principle. This principle is essentially the basis for the Cartagena Protocol, a convention on biodiversity aimed to protect biodiversity from living modified organisms. (signed January 2000)