

Genetically modified foods and crops

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Genetically Modified Foods and Crops

- Introduction: setting the context
- The pattern of relative precaution over time
- Causes of precautionary regulation
- Consequences of precautionary regulation
- What have we learned and what can we do ?

UK deaths per year related to diet or food

<u>Risk</u>	<u>Approximate number</u>
Cardiovascular disease*	73,000
Cancer*	34,000
Foodborne illness	~500
Food allergy	<20
vCJD	15-25
GMOs, pesticides, growth hormones	nil
Choking to death	200
Bed or chair accident	80

* assumes one-third of cardiovascular disease deaths and one-quarter of cancer deaths are diet-related

1974

first EU Research Policy

start of Commission work on first biotech programme (adopted 1981)

BERG LETTER, July '74

Nature
Science

temporary and limited moratorium

Asilomar Conference
February 1975

NIH RAC,

Guidelines

Europe: national initiatives
e.g. UK ACGM,
Commission proposals

A case study in the
"Precautionary approach"

1982 Council
Recommendation 472,
national registration of
rDNA work

RECOMBINANT DNA SAFETY CONSIDERATIONS

Recommendation of the OECD Council, 16 July 1986:

"Recognising that there is no scientific basis for specific legislation to regulate the use of recombinant DNA organisms"



PARIS 1986

DIRECTIVE 2001/18/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 12 March 2001

Precautionary principle taken into account

Respect for ethical principles

Monitoring for direct, indirect, immediate, delayed or
unforeseen effects

Research on potential risks

Labelling and traceability

Unique identifier

Consent for fixed period

Report on socio-economic advantages and disadvantages

Union of Concerned Scientists Feb 2004

"On those issues and others, including global climate change, both the UCS and other scientists assert that the Bush administration has repeatedly stated that the existing research is uncertain or inadequate in order to justify not taking action to correct problems. They see the president's insistence on more research before making some decisions related to science as motivated primarily by his desire to protect business and industry from the costs and changes suggested by scientific findings."

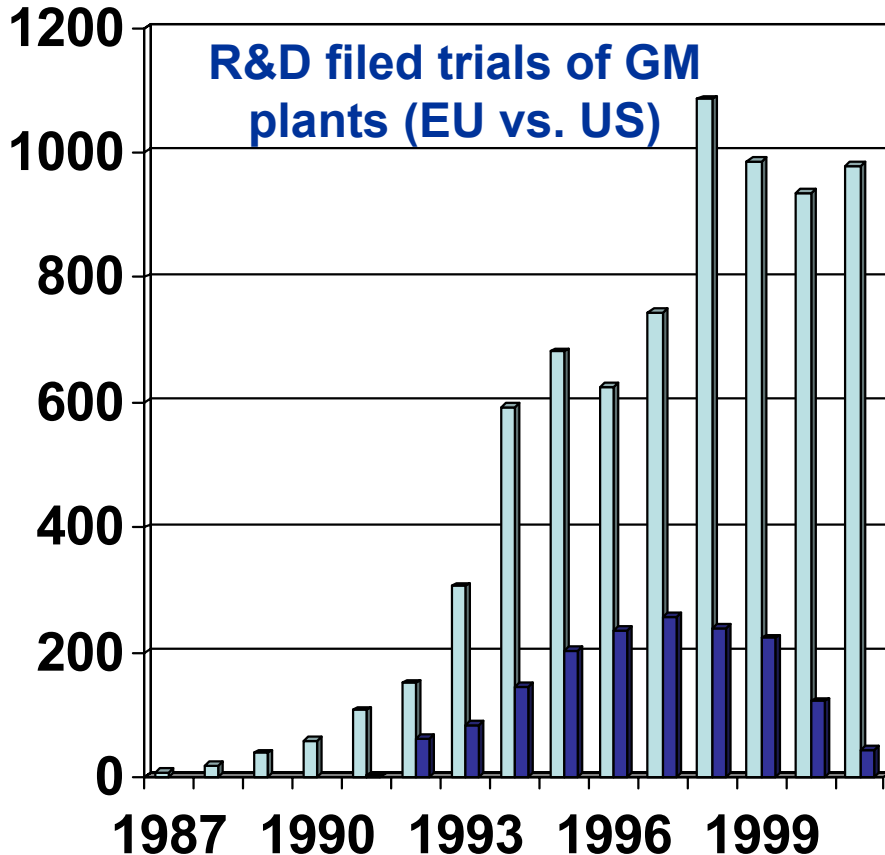
International Service for the Acquisition of Agri-biotech Applications (ISAAA).

MANILA, Philippines (Jan. 13, 2004)

- plant biotech crops :2003 total up 15 percent to 167.2 million acres or 67.7 million hectares
- 7 million farmers in 18 countries —now plant biotech crops, up from 6 million in 16 countries in 2002. Almost one-third of the global biotech crop area was grown in developing countries, up from one-quarter last year.

Life Sciences and Biotechnology Strategy

Progress report of 5 March 2003 - COM (2003) 96



- GMO field trial applications in EU dropped by 76% since 1998
- 39% of GMO research projects cancelled over the last four year
- VC investments dropped and small companies stopped participating in innovative plant biotechnology research; biotech companies have relocated research, field trials and commercialisation of new GMOs outside the EU

➤ **Need for a clear and consistent policy within the Member States on biotechnology to achieve the goals set at the Lisbon, Stockholm and Barcelona Councils**

GMOs in the pipeline in Europe

PERIOD 2002-2007

Group 1: next 5 years

- Herbicide tolerance
- Insect-resistance

- Modified fruit ripening

- Modified starch or fatty acid content (in particular for technical purposes)

PERIOD 2007-2011

Group 2: next 5 to 10 years

- Fungi-resistance
- Virus-resistance
- Herbicide tolerance

- Modified starch content
- Modified fatty acid content (for technical and nutrition purposes)
- Modified protein content
- High erucic acid content

AFTER 2011

Group 3: more than 10 years

- GM plants resistant against abiotic stress factors
- GM plants with enhanced yield characteristics
- GM plants with an enhanced content of “functional” ingredients (rice, vegetables)
- GM hypoallergenic crops
- GM trees with modified lignin content
- GM plants for molecular farming (tobacco, maize, potato, tomato)

(Colors: input traits, output traits)