



# Biotechnology- Future of Agriculture in the Arab World

The International Conference on the role of the joint Projects  
to achieve Arab Economic Integration  
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# World Run out of Food

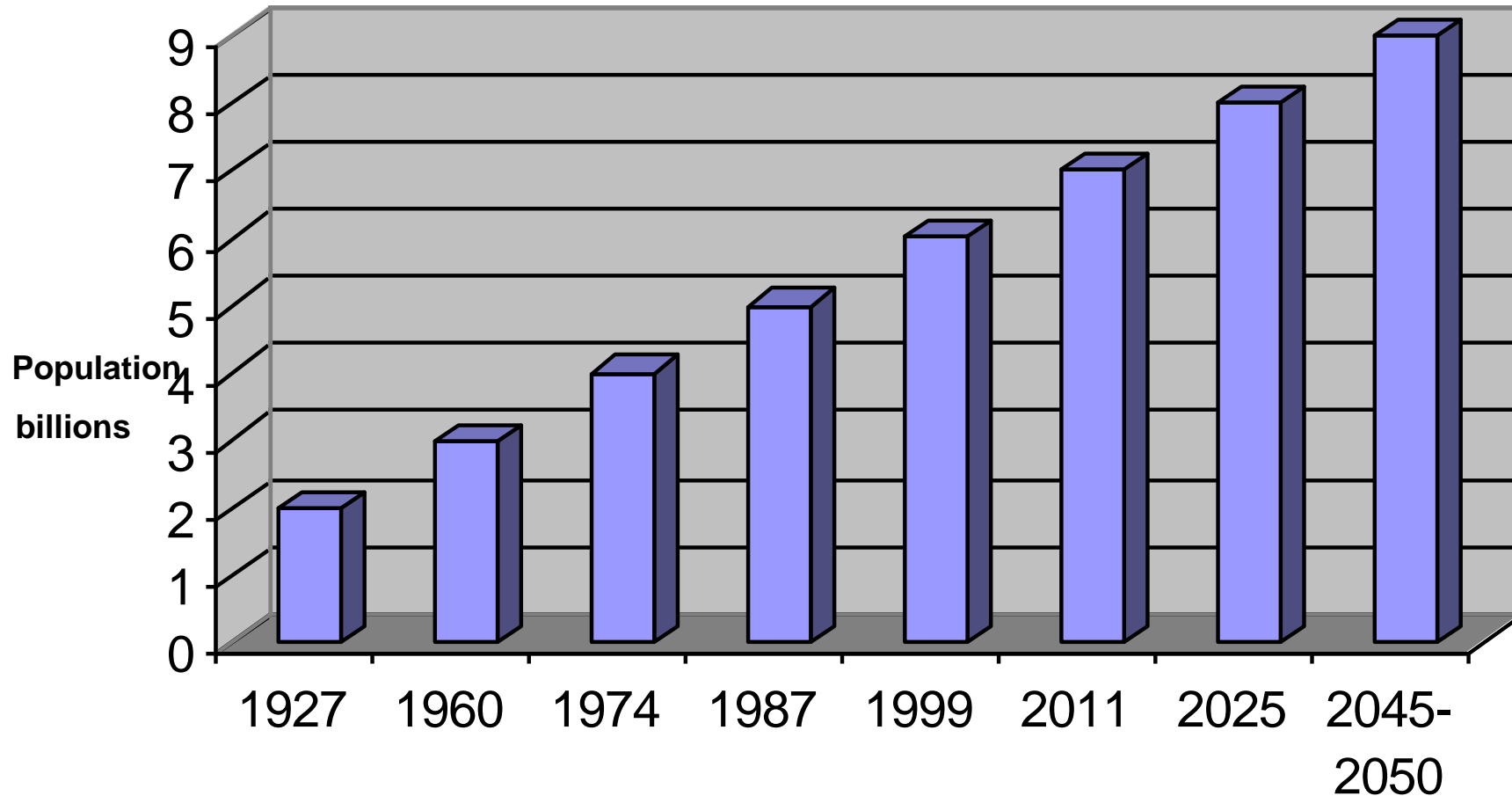
- ❑ Water shortages and inefficient irrigation threaten the world's ability to feed growing population.
- ❑ Food Supply is based on unsustainable water practice.
- ❑ Agriculture and irrigation methods consume (70% of available water).

- ❑ Cereal grains contributing more than 2/3 of the world production and 1/2 of the world protein.
- ❑ The grain- growing regions and farming areas face "really tight " water situations.



- ❑ The Wheat prices have risen by 50% from June to September 2010.
- ❑ Crop land per capita is declining, degraded on urbanized.

# World Population Estimate



**By 2030 , the Arab World population is expected to reach 510 million**

**Farm more land or increase the yield from  
each unit land??**

# Challenges and Limitation facing Agriculture and Food Security in the Arab World

- ❑ Population growth and Growing demand for food and food production
- ❑ Water shortage and inefficient irrigation.
- ❑ Desertification and Shortage of arable land.
- ❑ Inadequate infrastructure.
- ❑ Trade practice and Insufficient marketing services and limited access to the international market.
- ❑ Socio-economic assistance to small scale farming.
- ❑ Environmental degradation and Climate change.
- ❑ Consumption patterns.
- ❑ Financial and economic crisis
  
- ❑ **Lack of access to new technology, new crops of higher yields, breeding and Transgenic and Biotech Crops.**

# New technology offer new opportunities

- ❑ Mendel publication . (1865)
- ❑ Structure of DNA (Crick & Watson) . (1952)
- ❑ Agrobacterium tumefaciens mediated transformation. (1977)
- ❑ Production of the first transgenic crop. (1984)
- ❑ Production of the first insect resistant transgenic crop. (1987)
- ❑ Commercialization of the first transgenic crop. (1994)



# Global Area of Transgenic Crop up to 1998

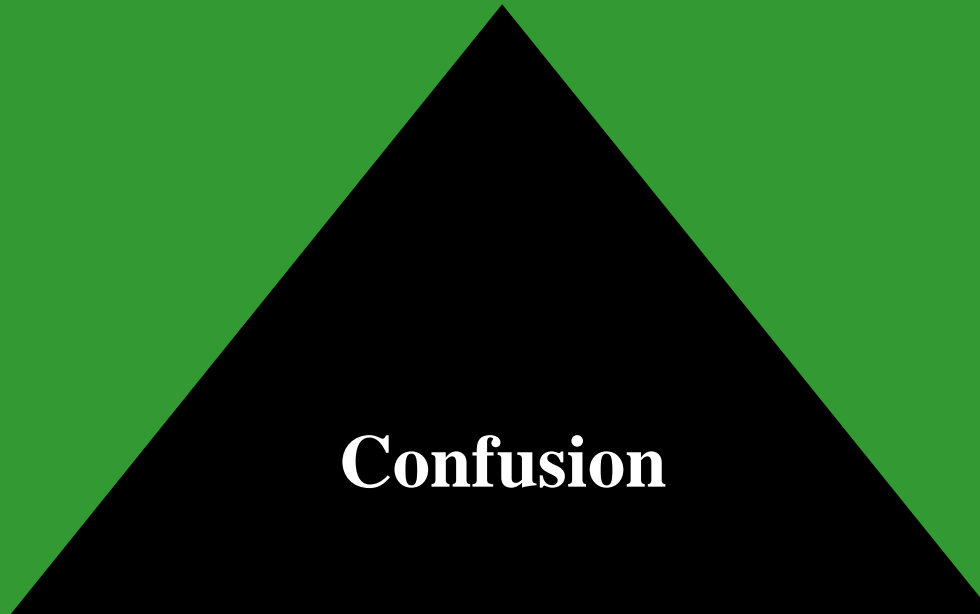
By Trait (millions of hectares)

Trait	1996	1997	1998
Herbicide Tolerance	0.6	6.9	19.8
Insect Resistance	1.1	4.0	7.7
Insect Res.& Herb.Tol	0.0	0.1	0.3
Quality Traits	<0.1	<0.1	<0.1
Total	1.7	11	27.8

Source : Clive James, annual reports international service for the Acquisition of Agri-Biotech Applications (ISAAA)

Dr.Ali Shams El din  
[www.bu.edu.eg](http://www.bu.edu.eg)

▪ **Research & Scientific Facts**



▪ **Governments**

▪ **Politics**

▪ **Decision Making**

▪ **Media**

▪ **Public Opinion**

# Prince warns of 'new-tech' crop dangers

By Charles Clover, Environment Editor

THE Prince of Wales today attacks multi-national companies for trying to persuade the public that the growing of genetically-engineered crops should be allowed in Britain, probably next year. In an article in *The Daily Telegraph*, he says he will not eat food made from such produce, nor give it to his family or guests. Genetic engineering "takes mankind into realms that belong to God and to God alone".

It raises "crucial ethical and practical considerations" which have not been properly tackled, he says.

Staples such as soya and maize, mixed with genetically-manipulated (GM) varieties at source, already enter Britain in large quantities from North and South America for use in foodstuffs.

Approval is now being

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**'We simply do not know the long-term consequences for human health and the wider environment of releasing plants bred in this way'**

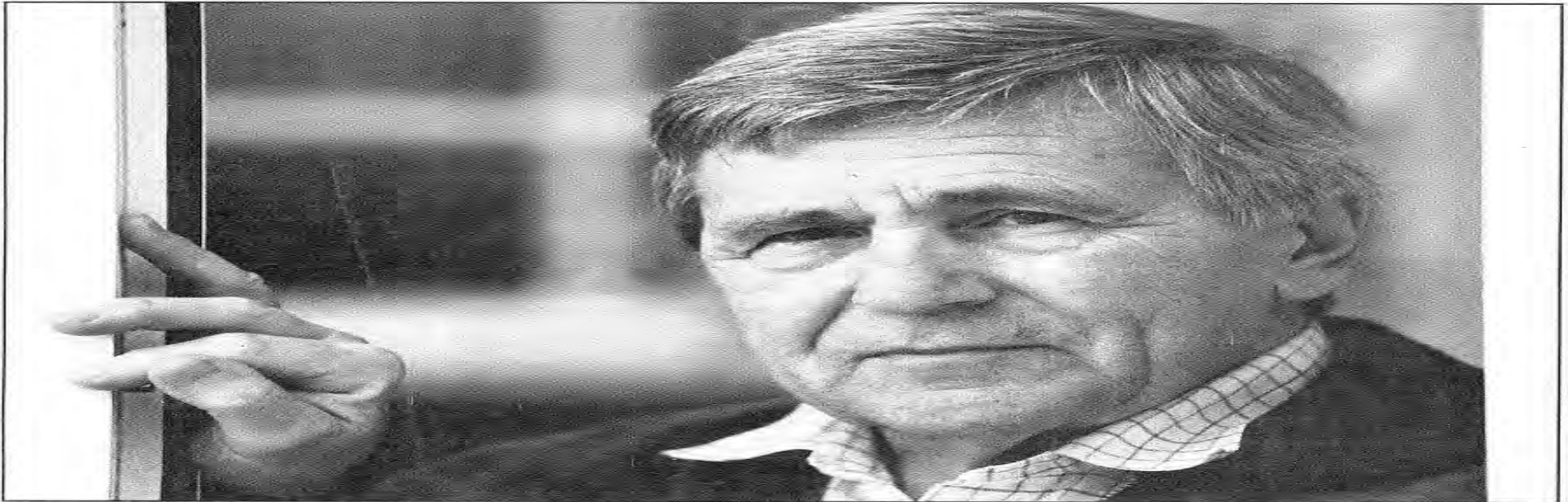
— The Prince of Wales

**Seeds of disaster: Page 16**

its own-brand products. GM soya, which is used in hundreds of foodstuffs, amounted to 15 per cent of the US harvest last year. Within 10 years, virtually all the world's staple crops could be from a few GM varieties, the Prince says.

The Government is divided on whether there are sufficient controls to allow the

# SCIENCE



Dr Arpad Pusztai: forced to retire as the victim of a conspiracy or author of flawed research?

PA

## Pusztai: the verdict

**GM food: safe or unsafe? First we must ask experts in this field how they rate the research work that led to this most recent controversy, says Steve Connor**

**T**he case of Arpad Pusztai – the scientist forced to retire over his public comments about genetically modified (GM) potatoes – has become a *cause célèbre* with the environmentalists. He claims to have shown that GM food can stunt the growth of laboratory rats, harm brain development and damage the immune system. If he is right, it represents a hammer-blow to the biotechnology industry, which is keen to exploit advances in genetics. If he is wrong, Dr Pusztai could be accused of whipping up

to identify ways of making crops pest-resistant, with minimum side-effects.

Dr Pusztai's role, as an expert on toxic plant proteins called lectins, was to undertake a series of feeding experiments using GM potatoes and laboratory rats. His particular interest was a lectin called GNA, found in the bulbs of snowdrops, which acts as a natural pesticide. According to Dr Pusztai's report no other lectin-producing GM plants were used in the experiments, although he does say he performed some "analytical" work with GM potatoes expressing another, more toxic lectin.

reviewed journal, which we passed to Professor Sanders.

Dr Pusztai fed the rats a diet of raw, baked or boiled potatoes. Some of the potatoes, he says, were genetically modified with the GNA lectin and some had GNA added to unmodified potatoes. A diet that solely consists of potatoes is so nutritionally poor that he sometimes added a protein supplement, otherwise the experiment would breach Home Office regulations limiting the suffering of animals. Two types of feeding trial took place: one over a 10-day period, the other over 100 days. His report states there

parent line. This again indicated that digestion and absorption of nutrients of transgenic potato diets was retarded in comparison with ordinary potato diets," Dr Pusztai writes.

A test of the rats' immune systems during this experiment also indicated that the animals fed transgenic potatoes were almost always more suppressed. Dr Pusztai claims that when free GNA was added to a diet of unmodified potatoes, he did not see this suppression. In other words, there was something about the act of genetic modification itself that has led to the effect he has observed.

# BUSINESS REVIEW

## THE FRANKENSTEIN EFFECT

**MONSANTO: A COMPANY IN NEED OF A SERIOUSLY MODIFIED IMAGE**



Katya Lindgren



# Planting of GM crops to be halted

GENETICALLY modified crops will not be grown commercially until the Government is satisfied that their management does not harm farmland wildlife, the Environment minister Michael Meacher said.

Commercial planting will not be allowed until enough data have been gathered.

The assurance, amounting to an indefinite moratorium, will go some way to meeting the concerns of the Government's wildlife advisers, English Nature, that the countryside may be devastated by new weed-killers which most of the crops are being designed to accommodate.

English Nature and its sister agencies in Wales and Scotland have called for a three-to-five-year moratorium on commercial plantings until research on the new weed-killers, and the possible trans-pollination effect on wild plants of the GM crops, has been carried out.

Mr Meacher said yesterday:

BY MICHAEL MCCARTHY,  
COLIN BROWN  
AND FRAN ABRAMS

the answers. We want to understand people's views," the letter said.

At present the Government has agreed a voluntary moratorium on commercial GM plantings with the biotechnology industry until spring 2000. Yesterday both English Nature and the Royal Society for the Protection of Birds said that this would not be long enough for proper test data to be gathered.

Two farms are being used this summer to test the large-scale environmental effects of growing oilseed rape genetically modified to be herbicide-tolerant, which is first in the queue for commercial growth in the UK.

But Mr Meacher said that if enough data had not been collected by next spring, he would go back to the biotechnology companies and explain that



Genetically modified soya dumped yesterday at the gates of Downing Street, where seven Greenpeace members were arrested and later released on police bail. Activists were also held trying to stop a GM shipment being landed in Liverpool, and police impounded the boats of Greenpeace members heading to the port for a seaborne protest

Mykel Nicolau



# GM food is banned by Blair friend

TONY BLAIR is facing further embarrassment over the Government's stance on genetically modified foods after it emerged that a company run by one of his favourite businessmen has decided to phase them out.

Northern Foods, chaired by the Labour peer Lord Haskins, is removing GM ingredients from its brands following consumer fears over their safety.

The company, one of

**BY PAUL WAUGH**  
Political Correspondent

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ulation Task Force, is a big donor to Labour Party funds and one of the Prime Minister's most trusted business advisers.

His company's decision will embarrass the Government as Mr Blair and his ministers have repeatedly stressed that GM products are safe and have ruled out a moratorium on com-

such as modified maize or soya. "This is the latest in a long line of decisions by the big manufacturers and supermarkets who have been forced to respond to public opinion," she said.

"It means that the Government is isolated and in serious danger of looking silly if it continues to back GM food. I would hope that Tony Blair now listens to this message, coming as it does from one of his closest

# Doctors call for GM food ban to ease public fears

By Celia Hall, Medical Editor

LEADING doctors issued a demand today for an indefinite moratorium on the planting of genetically modified crops because of public concern and the lack of scientific evidence on their long-term safety.

A report from the British Medical Association says: "As we cannot yet know whether there are any serious risks to the environment or human health, the precautionary principle should apply."

This is the first time that a leading medical organisation has commented on GM foods.

The BMA's tough recommendations include the call for a ban on the planting of crops resistant to antibiotics because of the possible implications for antibiotic resistance in humans.

The report says it is "essential" that testing for potential allergic reactions to genetically modified food-stuffs should be improved.

"We felt strongly that there should be a cautious approach," said Prof Sir William Asscher, chairman of the BMA Board of Science, which produced the report.

"Our first anxiety is that there is no turning back once you have allowed something

health by making it easier to track any group of people who had suffered some adverse effect.

The statement concludes: "Nothing in life is free of risk. When something is judged to be 'safe', it merely falls within acceptable limits of risk."

It calls for the "rigorous assessment" of any applications from companies to grow GM crops in trials and says that evidence from the United States of the environmental safety of such crops may not be applicable in Europe.

Monsanto, the biotechnology company that leads the field in the global development of GM crops and foods, rejected the BMA's assertion that there was insufficient evidence to proceed.

Tony Coombes, a spokesman for the company, said: "How much more regulation does the BMA want? GM crops and GM foods are the most highly regulated novel products available.

"The regulatory system in this country is being copied throughout the world. We disagree very strongly with the BMA's assertion that there is insufficient evidence to inform decisions on GM foods."



# EP News



European Parliament, January/February 1999

AX-AD 99-001-EN-C ISSN-0250 5754 EP News

# Demand grows for GMM crop controls

**IN A MONTH** that has seen widespread concern expressed in the media over foods containing GMs or genetically modified crops, MEPs this month voted for a clampdown on the authorisation of all GM products. Experiments in the EU are currently taking place involving genetic manipulation techniques in maize, potatoes, bean sprouts, tomatoes, cereals, rice, beet and tobacco.

Parliament's vote concerned a proposal from the European Commission to monitor the production and marketing of the new products and detailed amendments

the shelves, such as genetically modified tomatoes, is already part of a piece of EU legislation adopted last year and set to come into force when implemented by the national governments.

But to err on the safe side, the EU has already spent £30m testing the safety of gene crops in some 260 laboratories across Europe. A pressing concern is the the impact on the environment and the threat to biodiversity if the same gene is transferred to a whole range of species.

On the positive side, it is possible to pro-

# Test will trace GM ingredients in processed foods

By Robert Uhlig, Technology Correspondent

A TEST to detect minute traces of genetically modified soya and maize in highly processed foods — a feat previously thought impossible — has been developed by British researchers.

The discovery should give strength to new laws requiring retailers, restaurants and cafes to label products and dishes containing genetically modified ingredients.

ate, can detect traces of GM ingredients even in heavily processed products such as those containing soya oil or lecithins.

The test was developed by RHM Technology to monitor GM content in its parent company's cakes, sauces, bread and jams.

"We've even found some contaminated items in health food stores," said Bob

tamination in a loaf of bread deliberately spiked with 13 thousandths of a per cent GM-soya flour by weight.

Tests for GM foods usually employ a technique called polymerase chain reaction to generate millions of copies of the genetic material needed for detection and analysis.

However, food processing degrades DNA and other ingredients in processed

# Marks & Spencer bans GM food from its stores

By David Brown, Agriculture Editor

MARKS & Spencer banned all genetically modified food from its shelves yesterday — the first mainstream high street store to impose a blanket embargo on the new technology.

The decision was welcomed immediately by environmentalists and put pressure on the Government to delay the introduction of commercial GM crops.

But rival chains branded the move a "publicity stunt" and said M & S would find it impossible to guarantee that all its food was GM free.

M & S, which has 286 food stores and a food sales turnover of £2.7 billion a year, said it hoped to remove all GM ingredients from St Michael branded products within three months.

A statement said: "As all food sold in Marks & Spencer stores is 100 per cent own-brand, we will be the only major retailer where customers can purchase any product

on the shelves with full confidence that no GM ingredients or their derivatives have been used."

The company was confident that it could screen the food accurately without increasing prices.

About 100 M & S products, including ready-meals, contain GM ingredients. About 1,000 others, including chocolate, contain derivatives of GM foods — ingredients which do not have to be declared on labels under European Union rules. Derivatives include soya oil and a substance called lecithin.

The company said it was still confident about the safety of genetically modified foods but added: "Customers are concerned about the speed at which these developments are being pushed through."

The move came after Michael Meacher, the environment minister, denied that the Government had

made a "secret deal" for a voluntary three-year moratorium on commercial planting of GM crops.

"There is no secret deal between the Government and the industry," he said. "We have always said that before the full-scale commercialised growing of GM crops takes place in this country we would need to be sure that they don't harm the environment."

But he admitted that talks were under way on how field-scale trials of GM crops should be conducted. The first trials, on oilseed rape, sugar beet and maize for cattle food, are expected in a few weeks. It was possible, Mr Meacher said, that the first commercial GM crops would be planted next spring.

But, if the Government felt more time was needed for tests "we would go back to the industry and seek to negotiate an extension".

Tesco scooters: Page 29

# GM crops 'can fight Third World hunger'

Picture: CHRISTOPHER COX

GENETICALLY modified foods are as safe as any others and there is a "compelling moral imperative" to develop them to help fight hunger in the Third World, an influential think-tank said yesterday.

There are no grounds for a ban on GM food or moratoriums on commercial plantings, concluded the Nuffield Council on Bioethics. However, consumers had so far seen little direct benefit from the technology and it called for a broader assessment of the environmental impact of GM crops.

The report was produced for the council by a working party of experts from the fields of science, philosophy, law, poverty and an adviser to an environmental charity.

Nick Ross, the broadcaster and a council member, said the 150-page report, commissioned long before the most recent controversy and based on 18 months of deliberation and consultation, was the most important contribution to the GM debate so far.

The message was not that GM would feed the world, said Julie Hill, an adviser to the Green Alliance and another member of the working party. But if it could help deal with hunger and malnutrition "it would be immoral of us to stop", she said.

Jack Cunningham, chairman of the ministerial group on GM, welcomed the report yesterday.

At a Cabinet briefing, the Prime Minister said it was extraordinary the extent to which the media neglected reports such as this but gave huge coverage to anything "which fed the hysteria".

The report said there was a "compelling moral imperative" to develop GM crops to help feed developing countries, if they wanted them, "provided that proper safeguards are maintained or introduced".

The World Development Movement said these points should not be understated. Along with the charity Action Aid, it added that the regulatory framework and risk assessment should be introduced to the Third World before GM crops were grown there.

Christian Aid called the report naive, and said the solution to world hunger lay in organic farming. Friends of the Earth said world hun-



against potential dangers and "getting the benefits and avoiding the dangers can't be left to the marketplace alone". Intelligent government regulation was needed as well as publicly-sponsored research.

Prof Ryan said the widespread public unease "must be taken absolutely seriously". Among its 36 recommendations on a range of issues, the report emphasises that consumers should have a choice about whether to eat GM foods. Other recommendations are: **Developing countries:** GM crops could help combat malnutrition, which affects

of the acid soils of South America, or the increasingly water-deficient agriculture of south east Asia."

Traditional plant breeding methods that boosted yields by up to threefold have had a declining impact since the Eighties, added a working party member, Prof Michael Lipton, of the Poverty Research Unit at Sussex University. A precautionary

argument against GM. "It would be cruel to deny poor farmers the technology they need in the real world, simply because they would not need it in cloud cuckoo land," he said.

He said that since British scientists became the first to put genes in rice, one GM variety's yield had risen by 25 per cent, another offered resistance to a major pest (tungro virus) and the Rockefeller Foundation was testing rice enriched with vitamin A.

"Two hundred million people in developing countries are seriously deficient in vitamin A. Also, that 14 mil-

**Is GM technology unnatural?** Many believe GM amounts to improper tampering with nature. "We do not think that GM technology violates nature in any way that other modern plant breeding methods do not," said Prof Ryan. "GM crops are not intrinsically morally suspect."

Humans have been modifying plants for thousands of years, while breeders have been using disease-resistance and pest-resistance genes for decades: conventional plant breeding is often a matter of combining two sets of about 25,000 genes.

Entirely new species have been manufactured this way

report. "We can see no reason in ethics to draw a distinction." Although some genetic modifications are truly novel, there is no clear dividing line to separate those thought to be "unnatural", said Ms Hill.

But "we do think that anyone who does believe that GM food is unnatural and immoral should be able to avoid it", said Prof Ryan. On this mat-

**6 The public does not believe scientists, or**

vitamins, nuts that do not cause allergies, or warm-temperature crops that could be grown in Canada or Sweden.

**Environmental impact:** Although GM crops could put novel pressures on the environment, "there is, as yet, no reason to consider GM varieties as qualitatively different from non-GM varieties", said the report.

Prof Ryan said it was the job of regulation to encourage the development of GM crops that cut environmental stress. In particular, long-term monitoring was essential. "We welcome moves in that direction by the EU and UK government and we propose other ways of doing it." **Additional measures:** The report calls on the UK Government to set up an "over-arching" independent, biotechnology advisory committee with a broad remit to consider the scientific, moral, ethical, religious, social and consumer issues.

Field trials and limited commercial planting should be allowed to continue with close monitoring, but there was a need for a wider regulatory framework.

This should include an assessment of the cumulative effect of such plantings, rather than assessing each as a single crop. Environmental impact, such as loss of insects and birds, should be subject to long-term monitoring. Also, environmental audits should study if it was desirable or feasible to exclude GM planting from sensitive areas, said Ms Hill.

The report called for more reliable information to be given to the public. "The public does not believe scientists, does not believe Government and probably won't believe us," said Prue Leith, adding that supermarkets and the new Food Standards Agency could help inform the public.

**Intellectual property:** The report highlighted dangers if an entire crop or scientific method was controlled by a single company. Farmers must have a choice, said Prof Gale. "The major multinationals must not be allowed to achieve a monopoly."

It called on international plant and patent offices to avoid granting broad patents that could lead to monopoly suppliers. Genetic material of unknown function, "should not be patentable"

# Indian farmers burn transgenic cotton crop in field trial

[NEW DELHI] Farmers protesting against genetically engineered crops last week destroyed a plot in the Raichur district of India where *Bt* cotton produced by the US company Monsanto was undergoing field trial.

Some 60 members of Karnataka State Farmers' Association, led by its president, M. D. Nanjundaswamy, uprooted the plants and burnt them. They described their action as "a message to all those who have invested in Monsanto to take their money and get out".

The plot is one of the 40 locations in India where the *Bt* cotton, which is resistant to bollworm, is being tested by Maharashtra Hybrid Seed Company, in which Monsanto has 26 per cent shares. Permission for the trials was given by the Department of Biotechnology (DBT), and the trials were expected to be concluded by end of 1999.

Nature

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# رؤية مصرية

## طعام نأكله .. أم يأكلنا ؟ !

هناك مثل أوروبي مشهور يقول إن «المطريق إلى جهنم مفروش دائما بالنوايا الخسنة» وما أكثر الأمثلة على ذلك.. الديناميت الذي اخترعه الفريد نوبل لكي يوسع على البشر.. كما أدى حينئذ بتساق الجبال وتمهيد الطرق وتقدير التماثيل، التي ملأنا انتهى؟ أصبح كثير أدلة لقتل البشر عرفها التاريخ.. حتى جاء تقسيم النوايا - أيضا بزعم خنثية البشر - قفاق الديناميت ضراوة في مجال الاعتقال الجماعي للبشر.. وحتى في استخداماته السلمية فقد أدى إلى كوارث متشترتوبيل، وبثري سايلز أيلاند، أما آخر منجزات الغرب التكنولوجية فهي الهندسة الوراثية.. انصارها يقولون انها وحدها الكفيلة بإنتاج كميات وافرة من الأغذية تشبع طيارات الأقواد الجائعة المترامية في الدول النامية.. وأنها مستقبنا عن القييدات الخشيرة ونقلل من اعتمادنا على الأسمدة.. وأنها ستجعل المنتجات أطول عمرا وأكثر قدرة على مقاومة الفساد.. كل هذا جيد، حتى ولو لم يكن سوية أريحية الشركات التي تقوم بالتطوير والإنتاج.. وأما يهدف تعظيم الأرباح.. خصوصا من الدول النامية التي ستتحول إلى التبيعية والعبودية الكاملة لهذه الشركات.. التي ستكون المورد الدائم لهذه المهور.. والتي لا تصح للأختار وإعادة الزراعة مثل الدور التقليدية.. ولكن المشكلة أكبر من ذلك بكثير.. المشطة التي تقضى مضمج أوروبا هذه الأيام هي التقارير العلمية التي تحذر من استخدام هذه المنتجات التي تلاعب بها الإنسان.. ولا يعرف أحد على وجه اليقين كيف تتطور مستقبليا.. وهل سنأكل هذا الطعام أم يأكلنا.. وهل ستتحول هذه المنتجات البراقة في يوم من الأيام إلى طعام قرانكشيان كما يسودونه الآن في الغرب؟

وقد يقول قائل: ولكن الهندسة الوراثية ليس فيها جديد وإنما هي امتداد لما مارسته الناس منذ قرون فيما يسمى بالتهجين.. وهذه الكذوبة كثيرة.. فالتهجين كان دائما في إطار التوع نفسه.. أما الهندسة الوراثية فلا تعرف الحدود.. أنها بعد أن توصلت إلى حل رموز الشفرة الجينية - وهي واحدة في كل الكائنات - طورت ما يسمى بالمقصات الجينية، التي تقوم بقص الأحماض الأمينية (DNA) ثم إعادة لصقها، بعد إضافة مكونات وراثية جديدة.. منتزعة من أي نوع من الأنواع أو القصاصات.. وهي عملية تشبه عملية التوليف، المكونج، الذي يتم في القيلم السيتاسي.. بعملية مزج المشاهد المختلفة، التي جرى تصويرها كل على حدة، لتصبح كونيئا جديدا يعتمد على مزاج أو نزوة المخرج، والمونتير، ولا يلاحظ المشاهد.. ما يرعب الناس في أوروبا أن هذه التكنولوجيا لا يزيد عمرها على عشرين عاما، ولا يعرف أحد النتائج المحتملة لكسر القاعدة، التي ترج عليها أن التهجين يكون فقط في إطار النوع وحده.. كما أن يعرف مدى ثبات هذه المكونات واحتمال حدوث طفرات وراثية غير محسوبة في المنتج نفسه وفي الإنسان.. خصوصا الأطلاق - الذي يأكل هذه المنتجات.. لهذا يرفض غالبية الأوروبيين هذه المنتجات ويطالبون حكوماتهم بمن قوائم تحتم تمييز كل منتج يدخل فيه عناصر أنتجت بطريق الهندسة الوراثية، حتى يكون لهم الخيار في أمرهم.. يشترطونه أولا يشترطونه.. المشكلة أن المسألة قد خرجت عن حدود السيطرة لعدة أسباب:

١- ثبت أن ٤٠٪ من قول الصويا المنتج في أمريكا معالج جديدا.. ويجري خلط هذه الكمية مع باقي الإنتاج الأمريكي.. بحيث أن الصويا وكل تلك الذرة الأمريكية المعالجة تصنع في جميع أنحاء العالم في شكل مسحوق أو بونرة أو زيت خام أو مصنع.. فإنه طبقا لتقارير مراكز الأبحاث الألمانية فإن هذه المنتجات تدخل بالفعل في أكثر من ٢٠ ألف منتج غذائي للماني..

٢- بعد سيادة منظمة التجارة العالمية «WTO» والتي فتحت باب حرية التجارة على مصراعها لم تعد الدول ولا حتى المنظمات الإقليمية قادرة على التحكم فيما يدخل بلادها..

٣- في عصر سيادة الرأسمالية الجديدة أصبحت الحكومات تخضع في سياساتها لمصالح رجال الأعمال أكثر من مصالح الجمهور العام.. المنتكسات البيئية الأوروبية مثل السلام الأخضر - تمثل الآن رأس الخربة في التحرك الشعبي من أجل محاربة هذا الخطر القادم.. أما نحن فمستورد كل عام ما قيمته مئات الملايين من الدولارات هامبورجر وايس كريم وغيرها من المنتجات الأمريكية المعالجة وراثيا ونأكلها في سعادة وتكند.. هل يصدق قينا قول الشاعر العربي:

تو العقل يشقى في التعمير بعقله

وأخو الجهالة في الشقاوة يتعمد

د. حسن رجب

# Global Area of Transgenic Crop up to 2011

<b>Year</b>	<b>Global Area (Million Hectares)</b>
1996	1.7
1997	11
1998	27.8
1999	39.5
2000	44.2
2001	52.6
2002	58.7
2003	67.7
2004	81.0
2005	90.0
2006	102.0
2007	114
2008	125
2009	134
2010	148
2011	160

Source : Clive James, annual reports international service for the Acquisition of Agri-Biotech Applications (ISAAA)

Table 1. Global Area of Biotech Crops in 2011: by Country (Million Hectares)\*\*

Rank	Country	Area (million hectares)	Biotech Crops
1	USA*	69.0	Maize, soybean, cotton, canola, sugarbeet, alfalfa, papaya, squash
2	Brazil*	30.3	Soybean, maize, cotton
3	Argentina*	23.7	Soybean, maize, cotton
4	India*	10.6	Cotton
5	Canada*	10.4	Canola, maize, soybean, sugarbeet
6	China*	3.9	Cotton, papaya, poplar, tomato, sweet pepper
7	Paraguay*	2.8	Soybean
8	Pakistan *	2.6	Cotton
9	South Africa*	2.3	Maize, soybean, cotton
10	Uruguay*	1.3	Soybean, maize
11	Bolivia*	0.9	Soybean
12	Australia*	0.7	Cotton, canola
13	Philippines*	0.6	Maize
14	Myanmar*	0.3	Cotton
15	Burkina Faso*	0.3	Cotton
16	Mexico*	0.2	Cotton, soybean
17	Spain*	0.1	Maize
18	Colombia	<0.1	Cotton
19	Chile	<0.1	Maize, soybean, canola
20	Honduras	<0.1	Maize
21	Portugal	<0.1	Maize
22	Czech Republic	<0.1	Maize
23	Poland	<0.1	Maize
24	Egypt	<0.1	Maize
25	Slovakia	<0.1	Maize
26	Romania	<0.1	Maize
27	Sweden	<0.1	Potato
28	Costa Rica	<0.1	Cotton, soybean
29	Germany	<0.1	Potato
<b>Total</b>		<b>160.0</b>	

\* 17 biotech mega-countries growing 50,000 hectares, or more, of biotech crops.

\*\* Rounded off to the nearest hundred thousand

Source: Clive James, 2011.



# U.S. Seeks partners for WTO challenge to EU GM Moratorium

❑ The Bush administration is working to build an international coalition to help lift the European Union (EU) moratorium.

“Robert Zoellick. Says”

❑ U.S. farm and industry groups say EU moratorium costs them than \$300 million in annual sales.

05 March 2003

❑ Top U.S. and Argentine trade officials held talks on GM. “the Bush administration has been under pressure from U.S. farm groups”.

14 March 2003

Source: information programs., U.S. Dept of State. : Reuters.

# Bolivia's president "Evo Morales" links homosexuality, baldness among Europeans, to genetically modified foods

- ❑ Morales: genetically altered foods and Coca-Cola are “symbols of capitalism.”
- ❑ Morales also claimed that chicken and beef treated with hormones was also the cause for the hair-loss in men.

20 April 2010

- ❑ Bolivia's powerful unions turn on President Morales to protest food prices.

17 February 2011



# Biotech Crops

## Major Risks and Concerns

- ❑ The unknowable, long term effects.
- ❑ “Right to Know“ how food is produced.
- ❑ Drawbacks for developing countries.
  - Food Production.
  - Traditional Practices.
  - Economy.

# Biotech Crops

## Major Risks and Concerns

- Ethical objection to gene manipulation
- New food technology: The impact on health (allergenicity, antibiotic resistance, eating DNA, nutrient contents).
- Irreversible release into the environment of artificially created genomes.
- Antibiotic resistance.
- Leakage of GM proteins into soil.
- natural balance and ecosystem damage.
- Biodiversity, bird, wild varieties.
- Green concrete.

# Advantages and farm economic input

- Increase crop yield.
- Cutting costs of production.
- Less fuel and labor costs.
- Better crop quality.
- Reduction in pesticide use.

# Challenges Facing Arab Countries for Effective Access To the Market

- ❑ Technology transfer.
- ❑ Difficulties to develop new improved crop patent.
- ❑ The problem of regulation and over regulations.
- ❑ Tests for LMOs, identification and quantification.
- ❑ Tests at the export origin and confirmation at destination.

- ❑ Costs to cover delays.
- ❑ Tests differences – rejection – redirections.
- ❑ Science, Technology and knowledge diffusion.
- ❑ Labeling costs.
- ❑ Change in production practices, harvest, transport and shipment.
- ❑ Implementation of new legislations.

# Recommendations

- Wider cooperation and development of trade negotiation.
- Multilateral, regional and bilateral coordination.
- Monitoring of innovation.
- Technological platform and network.
- Information and knowledge diffusion.
- Local markets' administration.
- Financial mechanisms.



# Thank You