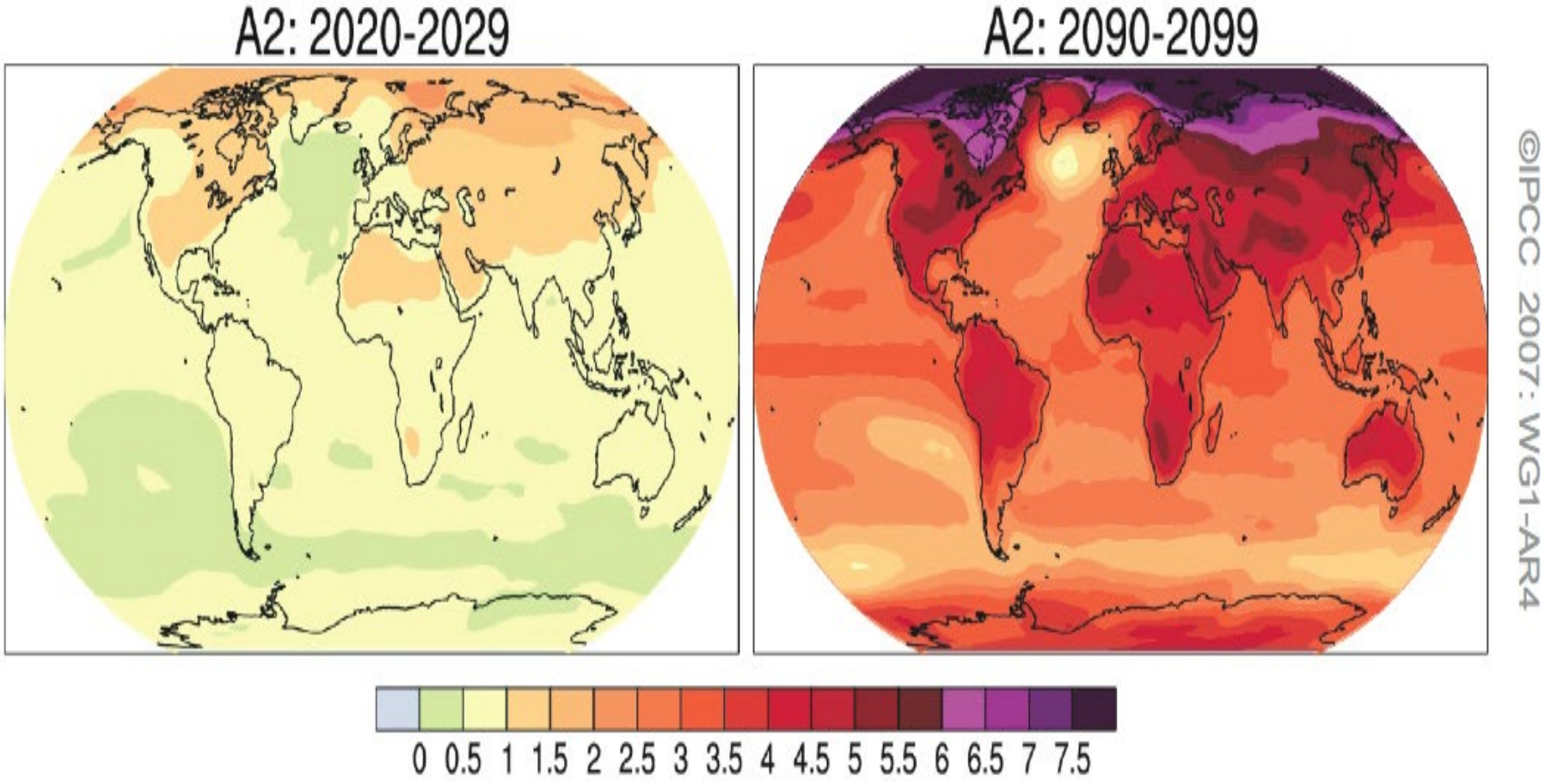
Biotechnological Patenting and Climate Change

Professor Michael Blakeney

Outline

- Climate change
- Climate-ready patents
- GM and negligence
- GM crops in developing countries

Projected surface temperature change



Source: Intergovernmental Panel on Climate Change (IPCC), 2007

The Challenges

- **World population** is projected to grow from 6.5 billion in 2005 to nearly 9.2 billion by 2050. Thus global food production must nearly double by 2050.
- **Natural resources scarcity**: expand the land basis (4.2 billion ha available for rainfed production) or tap into yet-unused yield enhancing resources.
- **Climate change** will cause a decline in yields and a higher occurrence of extreme climate events.
- Rapidly rising **energy** prices and higher demand for energy: agriculture will become increasingly important as a supplier to the energy market.

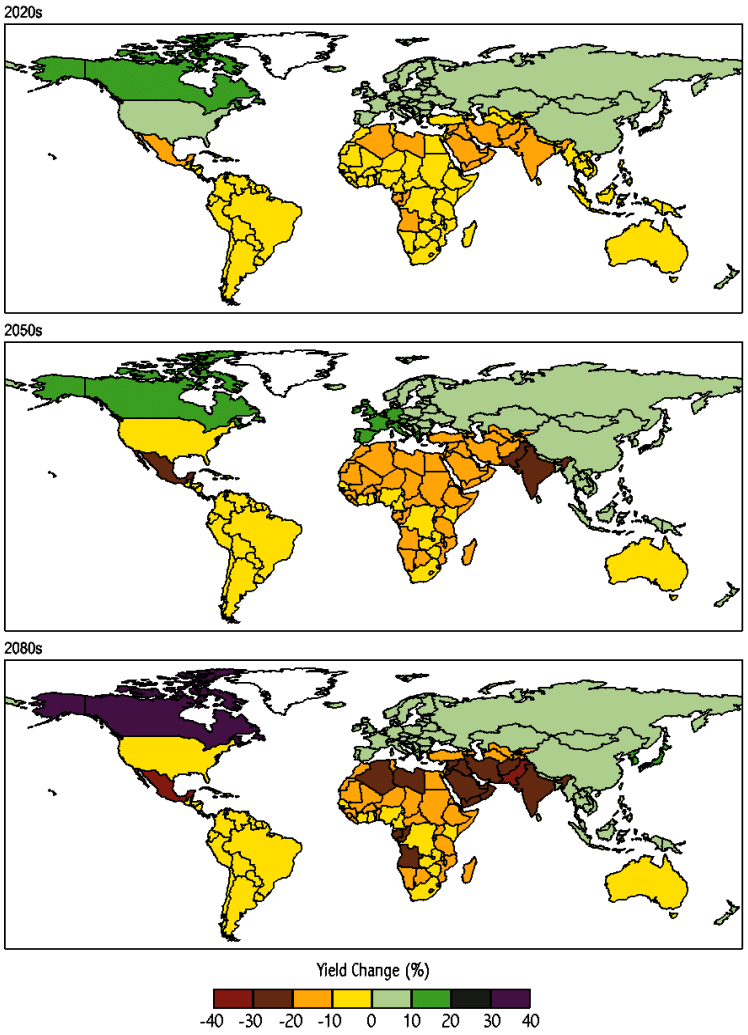
Impacts on agriculture

Four main climate related drivers on agriculture:

- Elevated carbon dioxide
- Rainfall and associated water resource availability
- Temperature – both direct and indirect through evaporation
- Extreme weather events (wind, flood damage)

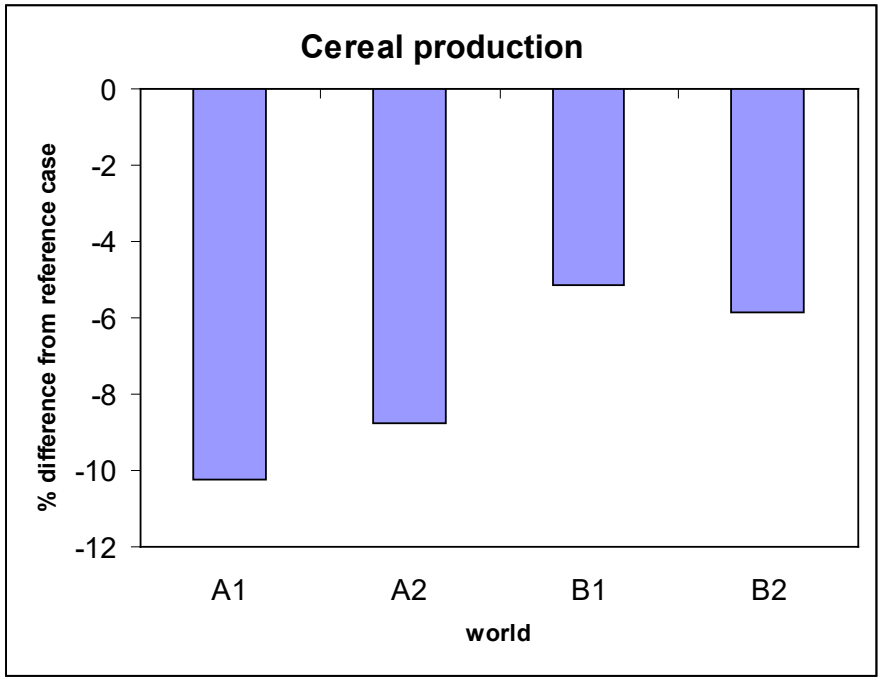
- These interact to affect agricultural productivity, quality, pests and diseases.

Climate Change Impacts on Grain Yields



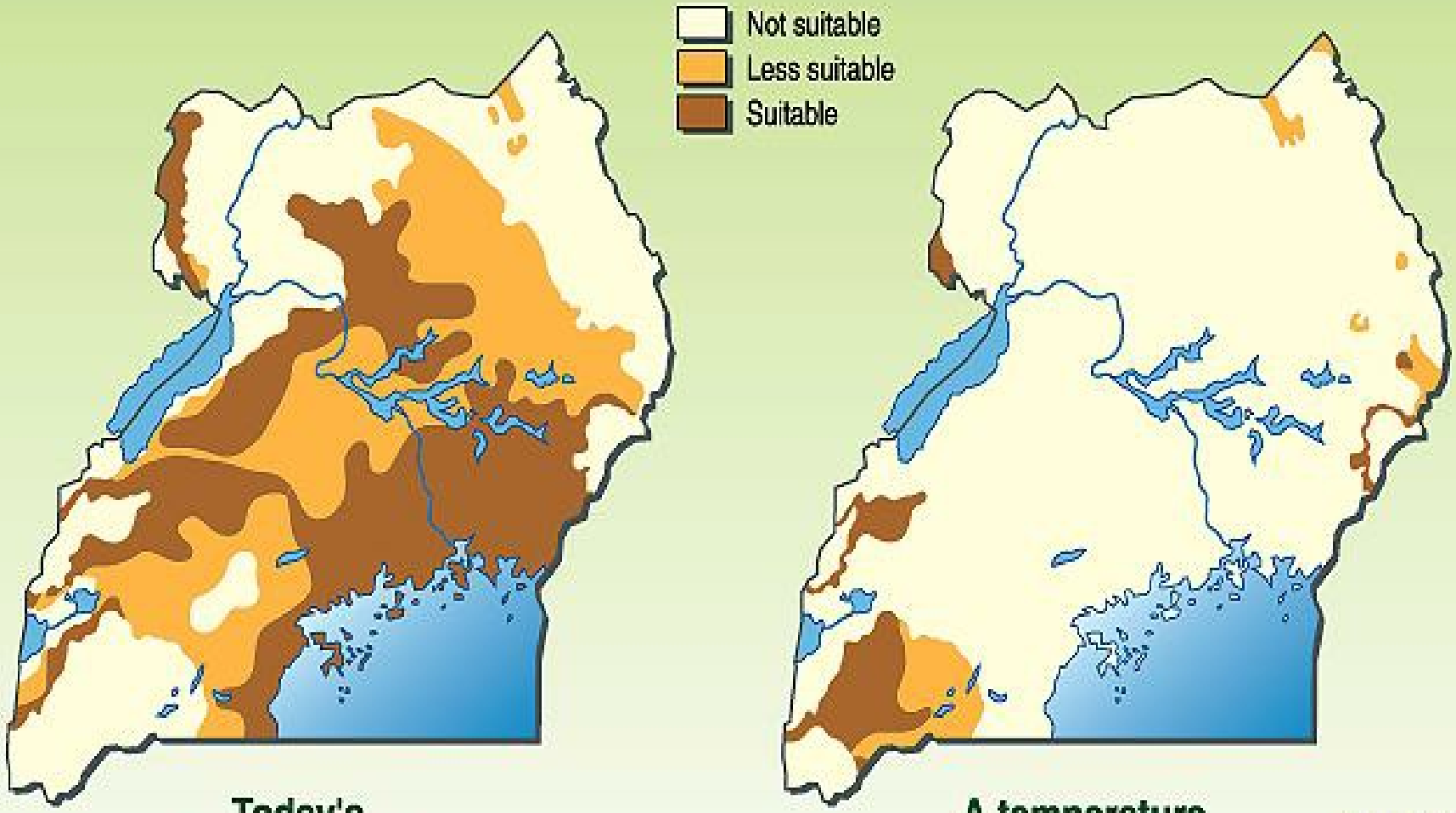
Parry et al. (2005)

Global production



Percentage change in average crop yields. Effects of CO_2 are taken into account. Crops modelled are: wheat, maize and rice.

Impact of temperature rise on robusta coffee in Uganda



Source: Otto Simonett, Potential impacts of global warming, GRID-Geneva, case studies on climatic change. Geneva, 1989.

India
Vulnerability to Climate Change

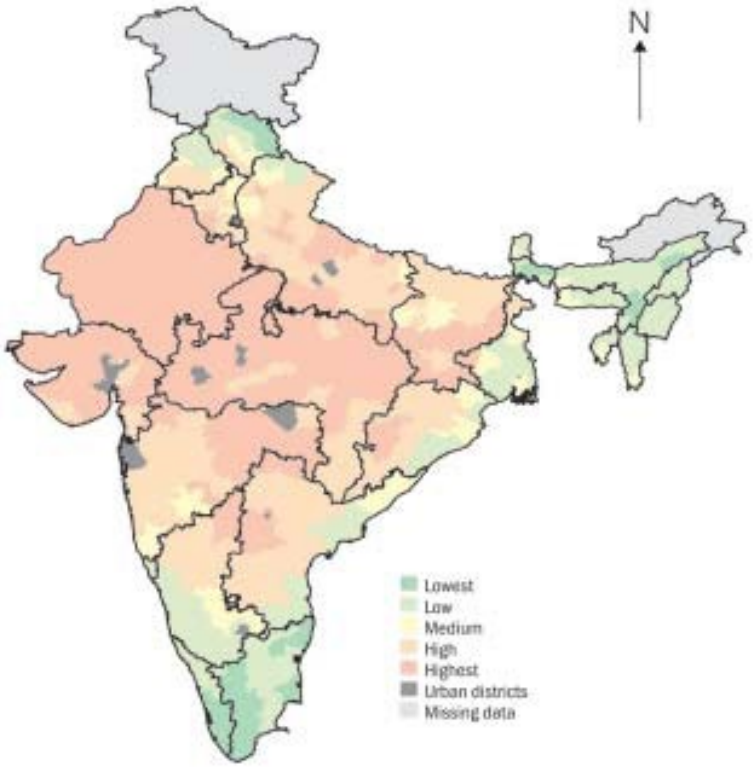


Figure 3.4 Vulnerability of Indian agriculture to climate change
Source TERI (2003): In Kelkar (2006)

- Districts in western Rajasthan, southern Gujarat, Madhya Pradesh, Maharashtra, northern Karnataka, northern Andhra Pradesh, and southern Bihar are ***highly vulnerable to climate change*** in the context of economic globalization.
- Numerous physical and socio-economic ***factors come into play in enhancing or constraining the current capacity*** of farmers to cope with adverse changes.
  - e.g. cropping patterns, crop diversification, and shifts to drought-/salt-resistant varieties
  - e.g. ownership of assets, access to services, and infrastructural support

The Patent System

- Encourages innovation and consequently economic growth by:
  - rewarding investments made in developing a new invention → protection (for 20 years)
  - publishing and making known technical information of a new invention → disclosure (during application process)

Somvanshi identified 30 patents relating to drought tolerant genes.

V. S. Somvanshi ‘Patenting Drought Tolerance in Organisms’ (2009) 3 *Recent Patents on DNA & Gene Sequences* , 16-25, accessed at http://www.benthamscience.com/dnag/samples/dnag3-1/0003DNAG.pdf, at Table 2.

Somvanshi Study

These included:

(i) patents related to Proline biosynthesis;

(ii) patented dehydration responsive element binding factors (DREB) and C-repeat sequences binding factors (CBF);

(iii) patents related to Protein Kinases;

(iv) various patents awarded for transcription factors involved in improving drought stress tolerance in plants, and

(v) patents related to miscellaneous drought tolerance genes.

ETC Group, 'Patenting the "Climate Genes"…and Capturing the Climate Agenda' *Communiqué*, no.99, May/June 2008, Available at http://www.etcgroup.org/upload/publication/687/03/etcgroupclimategenesfinal05_08.pdf

- identified 55 patent "families" (a total of 532 patent documents) that were applied for and/or granted to a number of biotechnology companies on so-called "climate-ready" genes at patent offices around the world.

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October 2010 Issue # 106

Gene Giants Stockpile Patents on "Climate-ready" Crops in Bid to become "Biomassters"

Patent Grab Threatens Biodiversity, Food Sovereignty

Issue: The six largest agrochemical and seed corporations are filing sweeping, multi-genome patents in pursuit of exclusive monopoly over plant gene sequences that could lead to control of most of the world's plant biomass – whether it is used for food, feed, fiber, fuel or plastics. Under the guise of developing "climate-ready" crops, the companies are pressuring governments to allow what could become the broadest and most dangerous patent claims in intellectual property history. For the Gene Giants, the goal is to become the world's "biomassters." The aim of plant breeding is no longer to feed people, but to maximize biomass.

- update of the 2008 study “examined patents containing claims concerned with abiotic stress tolerance (ie traits related to environmental stress, such as drought, salinity, heat, cold, chilling, freezing, nutrient levels, high light intensity, ozone and anaerobic stresses”.
- It noted “a dramatic upsurge in the number of patents published (both applications and issued patents) related to ‘climate-ready’ genetically engineered crops from June 30, 2008 to June 30, 2010, identifying 262 patent families and 1663 patent documents.
- ETC Group, ‘Gene Giants Stockpile Patents on “Climate-ready” Crops in Bid to become “Biomassters” Patent Grab Threatens Biodiversity, Food Sovereignty’ Issue no. 106, October 2010, Available at http://www.etcgroup.org/upload/publication/pdf_file/FINAL_climate-readyComm_106_2010.pdf

- The 2010 report contrasts the ownership of 9% patent families by public sector institutions (9% of the total) with the private sector which holds 91% of the total.
- The 2010 report points out that “just three companies – DuPont, BASF, Monsanto – account for two-thirds (173 or 66%) of the total.” This level of market concentration gives cause for concern for those who espouse the positive role of competition.

Climate-Ready Patent Claims (Patents and Applications) on 262 Patent Families – includes 1663 patent documents

June 30, 2008 – June 30, 2010

Assignee	# of patent families	% of total	total # patents & appli-cations in family(ies)	# of issued patents within family
DuPont	114	44%	240	104
BASF (includes CropDesign and Metanomics)	48	18%	522	53
Monsanto (collaborates w/ BASF)	11	4%	122	3
Mendel Biotechnology (partners w/ Monsanto and others)	4	2%	232	21
Syngenta	6	2%	39	2
Evogene (partners w/Bayer; Monsanto Dupont; Limagrain)	8	3%	64	1
Bayer	7	3%	43	2
Dow	3	1%	18	1
No Assignee	17	7%	99	5
Total Others	43	16%	272	28
TOTAL	262	100%	1663	221

ETC Report 2010

In 2002, rice (*Oryza sativa)* was the first major crop genome to be fully sequenced, and the first food crop genome.

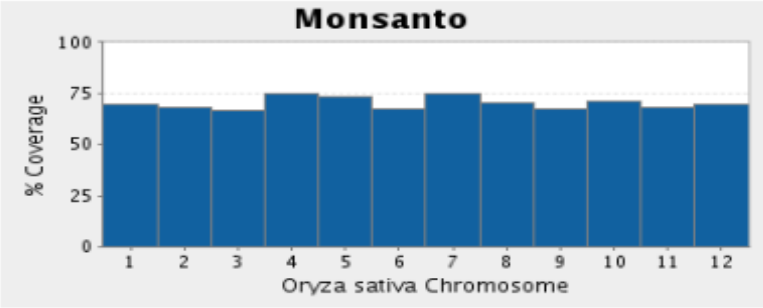
In 2006, Cambia, an Australian NGO that promotes transparency in IP, used its Patent Lens project to conduct an in-depth analysis of U.S. patents and patent applications that make claims on the rice genome. Patent Lens revealed that, by 2006, roughly **74% of the rice** genome was named in the claims of U.S. patent applications – due, in large part, to bulk sequence applications. They discovered that **every** segment of the rice genome's 12 chromosomes was recited in patent applications – including many overlapping claims.

"The key players in rice genome patent claims? No surprise: DuPont, Monsanto, Syngenta, BASF, Bayer."

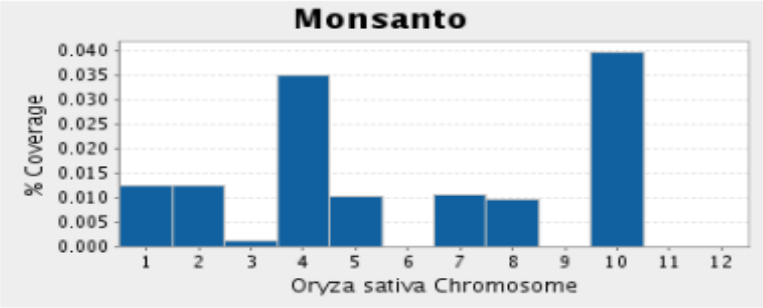
http://www.patentlens.net/daisy/RiceGenome/3662/3108.html

Monsanto (includes Calgene, Delta Pine, Seminis, Agracetus, Dekalb, Emergent, Produsem, Mahendra, Stoneville, and Pharmacia)

Applications

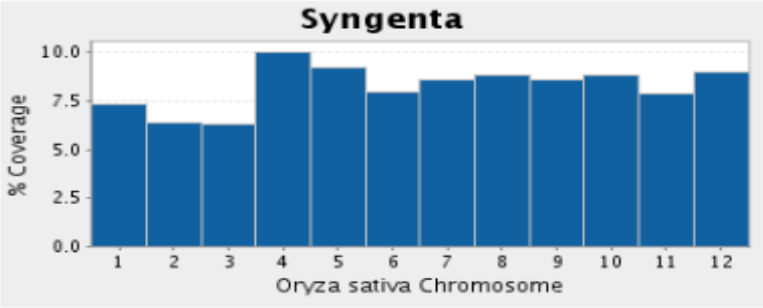


Granted Patents

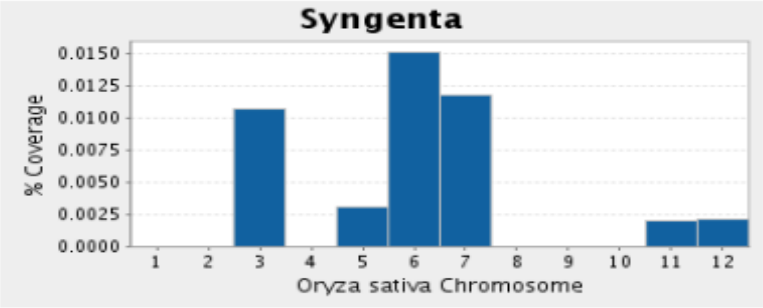


Syngenta (includes Torrey Mesa, Zeneca, Ciba Geigy, Novartis, Advanta, Garst, Agripro, and Danisco)

Applications



Granted Patents



US Patent 7,834,146, November 16, 2010

Recombinant polypeptides associated with plants

Abstract

Recombinant polynucleotides and recombinant polypeptides useful for improvement of plants are provided. The disclosed recombinant polynucleotides and recombinant polypeptides find use in production of transgenic plants to produce plants having improved properties.

[DNA is composed of nucleotides strung together to make a long chain called a polynucleotide

Peptides are short polymers of amino acids.]

Inventors: **Kovalic; David K.** (Clayton, MO)**, Zhou; Yihua** (Ballwin, MO)**, *Cao; Yongwei*** (Chesterfield, MO)**, Andersen; Scott E.** (St. Louis, MO)**, Edgerton; Michael D.** (St. Louis, MO)**, Liu; Jingdong** (Chesterfield, MO)

Assignee: **Monsanto Technology LLC** (St. Louis, MO)

Appl. No.: **10/767,701**

Filed: **January 29, 2004**

Claims

1. A substantially purified polypeptide comprising an amino acid sequence having at least about 90% sequence identity with the amino acid sequence of SEQ ID NO: 44,293.
2. The substantially purified polypeptide of claim 1, wherein said amino acid sequence is 100% identical with the amino acid sequence of SEQ ID NO: 44,293.
3. The substantially purified polypeptide of claim 1, wherein said amino acid sequence has at least about 95% sequence identity with the amino acid sequence of SEQ ID NO: 44,293.
4. A transformed plant comprising a recombinant nucleic acid sequence encoding a polypeptide having an amino acid sequence, wherein said amino acid sequence has at least about 90% sequence identity with the amino acid sequence of SEQ ID NO: 44,293.
5. The transformed plant of claim 4, wherein said plant is a Sorghum plant

BACKGROUND OF THE INVENTION

The ability to develop transgenic plants with improved traits depends in part on the identification of polynucleotides that are useful for the production of transformed plants having desirable qualities.

In this regard, the discovery of polynucleotide sequences of genes, and the polypeptides encoded by such genes, is needed. Molecules comprising such polynucleotides may be used, for example, in recombinant DNA constructs useful for imparting unique genetic properties into transgenic plants.

DETAILED DESCRIPTION OF THE INVENTION

- The present invention provides recombinant polynucleotides and recombinant polypeptides from Sorghum. The recombinant polynucleotides and recombinant polypeptides of the present invention find a number of uses, for example in recombinant DNA constructs, in physical arrays of molecules, for use as plant breeding markers, and for use in computer based storage and analysis systems.

DETAILED DESCRIPTION OF THE INVENTION

The recombinant polynucleotides of the present invention also find use in generation of transgenic plants to provide for increased or decreased expression of the polypeptides encoded by the recombinant polynucleotides provided herein. As used herein a "transgenic" organism is one whose genome has been altered by the incorporation of foreign genetic material or additional copies of native genetic material, e.g. by transformation or recombination. As a result of such biotechnological applications, plants, particularly crop plants, having improved properties are obtained. Crop plants of interest in the present invention include, but are not limited to soy, cotton, canola, maize, wheat, sunflower, sorghum, alfalfa, barley, millet, rice, tobacco, fruit and vegetable crops, and turf grass.

DETAILED DESCRIPTION OF THE INVENTION

In one embodiment the disclosed recombinant polynucleotides provide plants having improved yield resulting from improved utilization of key biochemical compounds, such as nitrogen, phosphorous and carbohydrate, or resulting from improved responses to environmental stresses, such as cold, heat, drought, salt, and attack by pests or pathogens.

Recombinant polynucleotides of the present invention may be used to provide plants having improved growth and development, and ultimately increased yield, as the result of modified expression of plant growth regulators or modification of cell cycle or photosynthesis pathways.

Other traits of interest that may be modified in plants using polynucleotides of the present invention include flavonoid content, seed oil and protein quantity and quality, herbicide tolerance, and rate of homologous recombination.

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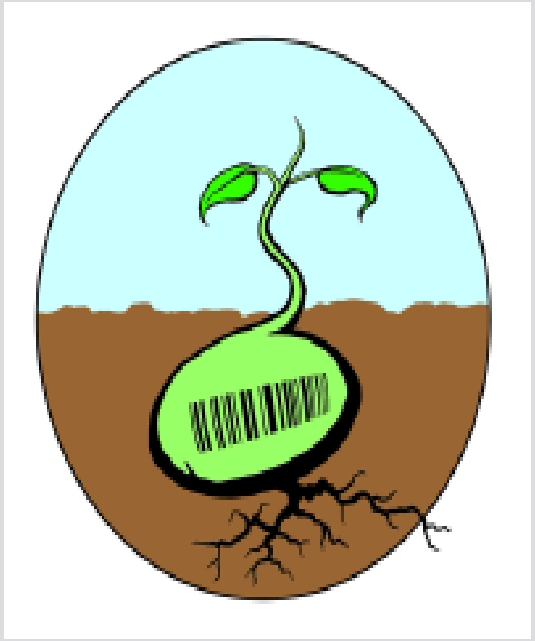
Communiqué

November 2008 Issue #100

Who Owns Nature?
Corporate Power and the Final Frontier in the Commodification of Life

Seed Industry

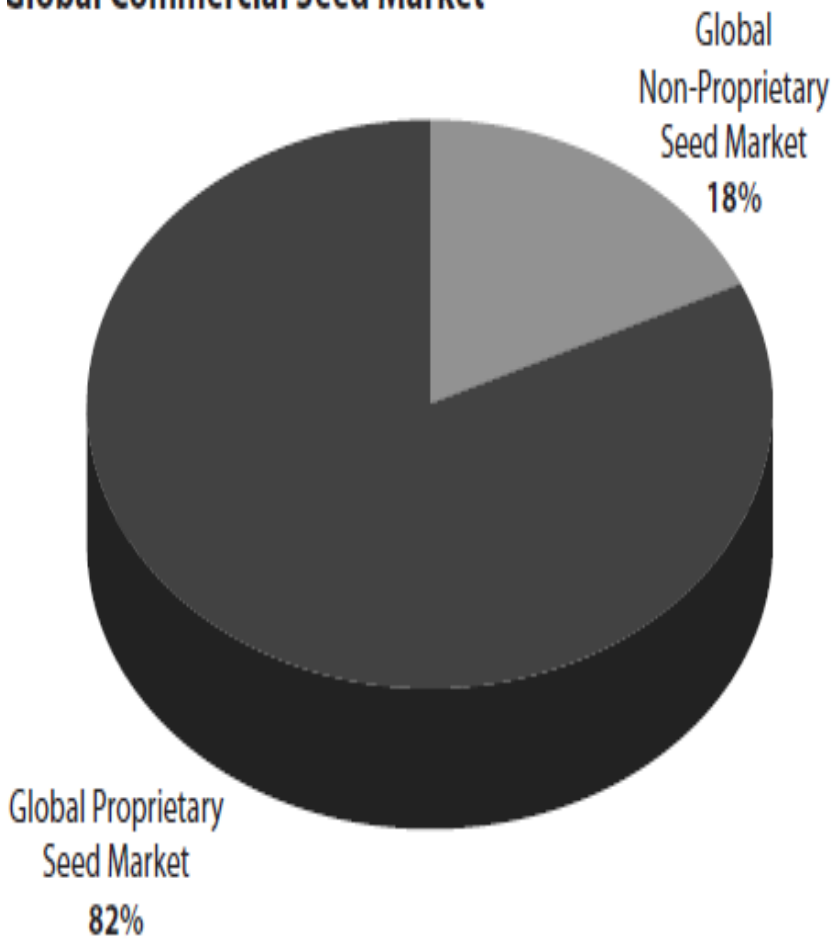
World's Top 10 Seed Companies



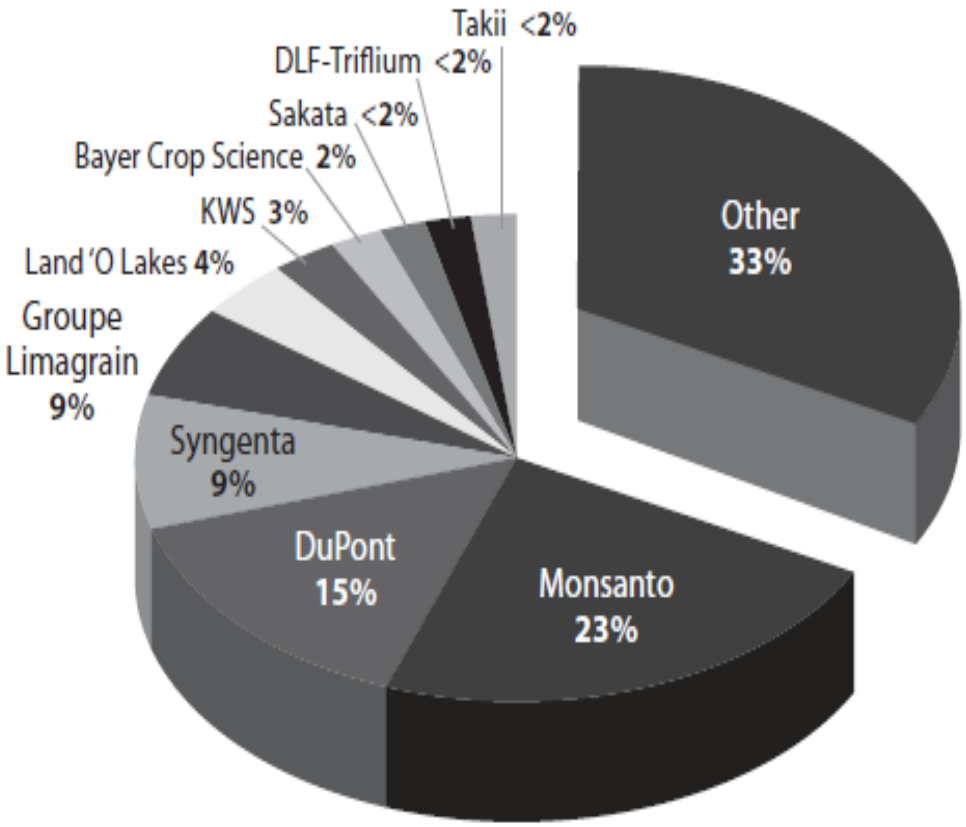
Company	2007 seed sales (US$ millions)	% of global proprietary seed market
1. Monsanto (US)	$4,964	23%
2. DuPont (US)	$3,300	15%
3. Syngenta (Switzerland)	$2,018	9%
4. Groupe Limagrain (France)	$1,226	6%
5. Land O' Lakes (US)	$917	4%
6. KWS AG (Germany)	$702	3%
7. Bayer Crop Science (Germany)	$524	2%
8. Sakata (Japan)	$396	<2%
9. DLF-Trifolium (Denmark)	$391	<2%
10. Takii (Japan)	$347	<2%
Top 10 Total	**$14,785**	**67%**

Source: ETC Group

Global Commercial Seed Market



Top 10 Share of Global Proprietary Seed Market



The top 10 seed companies account for 67% of the global proprietary seed market.

- the market dominance of these private corporations also has an important influence upon the sort of biotechnological research which is undertaken. For example, to what extent will the dominance of private corporations in biomedical and agricultural research direct that research towards Northern concerns away from Southern food priorities.
- Almost entirely neglected by these corporations are the five most important crops of the poorest, arid countries - sorghum, millet, pigeon pea, chickpea and groundnut.
- J. Alston, G.Pardey and J. Rosenboom 'Financing Agricultural Research: International Investment Patterns and Policy Perspectives' (1998) 26 *World Development* 1045.
- P.L. Pingali and G. Traxler, 'Changing focus of agricultural research: will the poor benefit from biotechnology and privatization trends?' (2002) *Food Policy* 27.
- Human Rights Council, *Report of the Special Rapporteur on the Right to Food, Jean Ziegler*, A/HRC/7/5, 10 January 2008, para. 44.

smh.com.au
The Sydney Morning Herald

Climate change farmers 'need GM crops'

May 7, 2007 - 5:19PM

Australians will have to accept genetically modified food if the agriculture industry is to continue in an era of climate change, an Adelaide expert says.

Professor Mark Tester from the Australian Centre for Plant Functional Genomics at the University of Adelaide said genetically modified (GM) food should be embraced as farmers battle the effects of global warming.

Prof Tester said a current GM study focused on improving the "toughness" genes of plants so they could survive in extended periods of drought, high-salinity areas or hotter weather.

Australian farmers who grew wheat and barley could benefit most from changes in the structure of plants, he said.

"Genetic modification can help accelerate improvements in crop plants to enable them to better cope with the rapidly changing environment," Prof Tester said.

"There is no doubt that as farmers face reduced yields, they will need all the tools they can get to help them grow our food sustainability and economically.

"Genetic modification is one of those tools."

Prof Tester said he understood current opposition to GM crops because the pub technological improvements would produce better crops for the future with less s

He said there was no reason why people who embraced organic and clean food

"Genetically modified food is about adapting the plant to the environment rather the plant," he said.

Greenpeace blasted for GM vandalism

Updated July 15, 2011 07:36:23

Scientists have condemned Greenpeace for destroying a trial crop of genetically modified (GM) wheat in Canberra.

Scientists say the destruction of the trial crop in Canberra's north yesterday is not only reprehensible, but also hypocritical.

CSIRO genetically modified the wheat to enhance its nutritional value, and it was to be used in the first human trials in Australia.

It was also Australia's first outdoor crop trial of the enhanced wheat.

Greenpeace protesters used string trimmers to destr
entire crop of GM wheat.

Related Story: Greenpeace destroys GM wheat
Map: Canberra

But Greenpeace says it took the dramatic action to destroy the crop using whipper-snippers because of health concerns, the risk of cross-contamination and the secrecy surrounding the trial.

Professor of Plant Science at the University of Adelaide Mark Tester says the technology is poorly understood and Greenpeace's attack was irresponsible.

Organic Seed Growers and Trade Association (and 38 others) v. Monsanto Company and Monsanto Technology LLC (2012-13)

ORGANIC SEED GROWERS AND TRADE ASSOCIATION, ORGANIC CROP IMPROVEMENT ASSOCIATION INTERNATIONAL, INC., THE CORNUCOPIA INSTITUTE, DEMETER ASSOCIATION, INC., CENTER FOR FOOD SAFETY, BEYOND PESTICIDES, NAVDANYA INTERNATIONAL, MAINE ORGANIC FARMERS AND GARDENERS ASSOCIATION, NORTHEAST ORGANIC FARMING ASSOCIATION OF NEW YORK, NORTHEAST ORGANIC FARMING ASSOCIATION/MASSACHUSETTS CHAPTER, INC., NORTHEAST ORGANIC FARMING ASSOCIATION OF NEW HAMPSHIRE, NORTHEAST ORGANIC FARMING ASSOCIATION OF RHODE ISLAND, CT NOFA, NORTHEAST ORGANIC FARMING ASSOCIATION OF VERMONT, RURAL VERMONT, OHIO ECOLOGICAL FOOD & FARM ASSOCIATION, FLORIDA CERTIFIED ORGANIC GROWERS AND CONSUMERS INC., SOUTHEAST IOWA ORGANIC ASSOCIATION, MENDOCINO ORGANIC NETWORK, NORTHEAST ORGANIC DAIRY PRODUCERS ALLIANCE, MIDWEST ORGANIC DAIRY PRODUCERS ALLIANCE, WESTERN ORGANIC DAIRY PRODCUCERS ALLIANCE, CANADIAN ORGANIC GROWERS, AGRICULTURAL INSTITUTE, FEDCO SEEDS INC., ADAPTIVE SEEDS, LLC, SOW TRUE SEED, SOUTHERN EXPOSURE SEED EXCHANGE, MUMM'S SPROUTING SEEDS, BAKER CREEK HEIRLOOM SEED CO., LLC, COMSTOCK, FERRE & CO., LLC, SEEDKEEPERS, LLC, SISKIYOU SEEDS, COUNTRYSIDE ORGANICS, WILD GARDEN SEED, CUATRO PUERTAS, SEED WE NEED, ALBA RANCH, WILD PLUM FARM, GRATITUDE GARDENS, RICHARD EVERETT FARM, LLC, PHILADELPHIA COMMUNITY FARM, INC, GENESIS FARM, CHISPAS FARMS LLC, MIDHEAVEN FARMS, KOSKAN FARMS, CALIFORNIA CLOVERLEAF FARMS, NORTH OUTBACK FARM, TAYLOR FARMS, INC., RON GARGASZ ORGANIC FARMS, ABUNDANT ACRES, T & D WILLEY FARMS, FULL MOON FARM, INC., COMMON GOOD FARM, LLC, AMERICAN BUFFALO COMPANY, RADIANCE DAIRY, QUINELLA RANCH, NATURE'S WAY FARM LTD., LEVKE AND PETER EGGERS FARM, FREY VINEYARDS, LTD., BRYCE STEPHENS, CHUCK NOBLE, LARHEA PEPPER, PAUL ROMERO, BRIAN WICKERT, BRUCE DRINKMAN, MURRAY BAST, AND DONALD WRIGHT PATTERSON, JR.,

Who Owns Nature? Corporate Power and the Final Frontier in the Commodification of Life

ETC Group www.etcgroup.org November 2008

From thousands of seed companies and public breeding institutions three decades ago, ten companies now control more than two-thirds of global proprietary seed sales. From dozens of pesticide companies three decades ago, ten now control almost 90% of agrochemical sales worldwide. From almost a thousand biotech startups 15 years ago, ten companies now have three-quarters of industry revenue. And, six of the leaders in seeds are also six of the leaders in pesticides and biotech.

Golden Rice and Trojan Trade Reps: A Case Study in the Public Sector's Mismanagement of Intellectual Property

http://www.etcgroup.org/upload/publication/305/01/com_goldenrice.pdf

In September 2000 ISAAA released a briefing paper entitled, "The Intellectual and Technical Property Components of pro-Vitamin A Rice (GoldenRice™): A Preliminary Freedom-to-Operate Review."11 ISAAA's study identifies 70 patents and 16 tangible property constraints (Material Transfer Agreements-MTAs, licences, agreements, etc.) that could have implications for the commercialization of Golden Rice.

http://www.no-patents-on-seeds.org/images/documents/report_future_of_seed_en.pdf

The future of seeds and food under the growing threat of patents and market concentration

Christoph Then & Ruth Tippe, April 2009

Written for the international coalition of “no patents on seeds”, www.nopatents-on-seeds.org

2. Concentration of the seed market

October 2008, Texas Grain Storage (Case 5:07-cv-00673-OLG, in Texas Western District Court)

By financially bundling its pest resistant seed-traits with its glyphosate-tolerant traits, Monsanto has used its monopoly power in pest-resistant and herbicide-tolerant traits to exclude competition in the relevant herbicide market, and obtain and maintain monopoly power in that market." (page 21 of the complaint)

GM and Negligence

GM canola spill from truck prompts calls for moratorium in WA

2 comments

Wednesday, 10/08/2011

Some farmers in the great southern region of Western Australia have called for a moratorium on genetically modified crops after a road accident in which 15 tonnes of GM canola was spilled.

The truck transporting the canola caught on fire near the town of Williams, 150 kilometres east of Bunbury.

Grain handler CBH is organising for a truck to be sent to the scene, so the canola seed can be transferred.

However, local farmer Jeanette Liddelow, who lives 500 metres from the site of the accident, says it's too little, too late.

"Incidents like this show that GM crops can't be contained and a full moratorium on growing GM crops should be reinstated."

Ms Liddelow says the spill threatens contract negotiations 12 growers in the area have with a Japanese company for GM-free seed.

WA farmer sues over GM contamination

AAP, July 28, 2011

A WA farmer is suing a neighbour for negligence after genetically modified canola seed blew onto his land, causing the loss of his organic crop certification.

Steve Marsh, from Kojonup in WA's Great Southern region, has instructed his lawyers to lodge a writ in the WA Supreme Court in Perth in coming days.

The writ alleges his neighbour, Michael Baxter, was negligent in allowing GM canola to blow onto the Marsh property before harvest, contaminating his land and causing the loss of its organic status.

About 70 per cent of Mr Marsh's farm is now unusable for organic farming.

Marsh -v- Baxter [2014] WASC 187

Steve Marsh from Kojonup alleged that his neighbour, Michael Baxter, was negligent in allowing GM canola to blow onto the Marsh property before harvest, contaminating 70% of his land and causing the loss of its organic status.

Baxter had chosen the swathing mode of harvesting of his GM canola crop which involves exposing the standing windrowed cut canola plants to the elements, in order for the seed pods to ripen more uniformly.

245 swathes were found to have blown into Marsh's farm

Marsh -v- Baxter [2014] WASC 187

- The Supreme Court of Western Australia ruled that the damage to Marsh had been caused by the strictness of the organic certifier's standards and not by Baxter's harvesting practices.
- Association of Sustainable Agriculture (Australia) Ltd (NASAA) decided on 29 December 2010 to withdraw the organic certification status for approximately 70% of Marsh's land.

WA organic farmer Steve Marsh facing $800,000 in costs after losing GM contamination case

By Nicolas Perpitch

Updated 19 Sep 2014, 6:54pm

Hoffman v. Monsanto Canada Inc. and Bayer Cropscience Inc, 2005 SKQB 225

The plaintiffs are organic farmers who seek to bring this action on behalf of all organic grain farmers in Saskatchewan. The defendants, Monsanto Canada Inc. (“Monsanto”) and Bayer Cropscience Inc. (“BCS”), are both manufacturers and distributors of agricultural products including chemical fertilizers and pesticides. The plaintiffs claim damages to organic grain farmers allegedly resulting from the development and commercial introduction into Canada of genetically modified (“GM”) canola by the two defendants.

Claim in Negligence

[70] I conclude that the plaintiffs have failed to establish a *prima facie* duty of care in accordance with its claim [in negligence]

[71] In addition, there are policy considerations that, in accordance with the second leg of the test, would in my view bar or limit the imposition of the duty of care alleged on the defendants in the circumstances of this case. First, as the plaintiffs [concede], both defendants received approval of the federal government for the unconfined release of their GM canola varieties prior to their release.

The imposition by the courts of a duty of care not to release these substances into the environment would therefore appear to be in conflict with express governmental policy.

Watson, R (on the application of) v Secretary Of State For Environment & Anor [1998] EWCA Civ 1250

- The applicant is a farmer in Devon. He specialises in the production of organic vegetables and is believed to be the largest such producer in Britain. Amongst his crops is sweet corn.
- The present application is prompted by his concern about a trial planting of genetically modified maize on an adjoining farm. That planting is due to pollinate within the next two or three weeks. Hence the urgency of these proceedings.
- The applicant fears the risk of cross-pollination between that crop and his own. Such contamination would threaten the organic status and accreditation on which his farming and livelihood depend. The central issue raised is whether the continuation of the seed trial is contrary to law.

Watson v Secretary Of State For Environment

- The control of the release of GMOs has been harmonised at Community level by Directive 90/220/EEC. Its purpose is to protect human health and the environment. The Directive has been implemented in the UK by Part VI of the Environmental Protection Act 1990
- S.111(1) ... no person shall ... release ... any genetically modified organisms ... except in pursuance of a consent granted by the Secretary of State and in accordance with any limitations and conditions to which the consent is subject.
- 107(10) An organism under a person's control is ´released' if he deliberately causes or permits it to cease to be under his control or the control of any other person and to enter the environment

Watson v Secretary Of State For Environment

- This action dismissed by the Court of Appeal as the growing trials had been approved by the relevant statutory authority, applying the relevant legislation.
- The appellant's action was tantamount to challenging a public decision in a private nuisance action, which is contrary to public policy.

GM Crops in Developing Countries

- **Hands off our maize! Resistance to GMOs in Mexico**
- GRAIN | 16 May 2013
- http://www.grain.org/article/entries/4725-hands-off-our-maize-resistance-to-gmos-in-mexico

- From 15 to 17 January 2013, the Red en Defensa del Maíz (Network in Defence of Maize, or RDM), made up of more than 1,200 communities in 22 states of the union, held its first assembly of 2013. It issued a concise summary of the current situation and reiterated the people's firm resolve to ban GMOs:
  - We reject the whole GE maize paradigm as a direct attack on over 10,000 years of stewardship of native maize; on the agricultural and subsistence strategies of peoples and communities; on Mexico's food security and sovereignty; on free and autonomous food production from native, patent-free, non-genetically modified seeds, and on public health.

- Today, after eleven years of resistance, we raise our voices along with the many others who have sounded the alarm against the threat of permits being granted for commercial planting of GMOs on over 2.4 million hectares in the states of Sinaloa and Tamaulipas. These are states in which large quantities of maize are grown for human consumption. Our cities would be inundated with contaminated maize that has been shown to be associated with health risks in studies in other countries – which is precisely what our communities and organizations have been saying for the past eleven years

- From January 21 to 31, members of UNORCA, a Via Campesina affiliate in Mexico, went on a hunger strike to protest the proposed commercial planting permits for GMOs. Its press release states:
- With this act of bodily self-denial as a civic gesture, we honour those 30 million of our compatriots who go hungry or cannot get enough food every day. We wish to share our concern for the health, culture, and economy of our nation, which are being degraded by a development model that favors a minority, including those transnational corporations that are now conspiring to take control over one of the greatest treasures of our peoples: maize.
- We wish to express our outrage at the immense crime that would be committed against the Mexican people if GE maize were approved for commercial planting. We demand that the federal government put the interests of rural people and the majority of Mexican farmers above those of the transnationals

Debate in defence of maize and against the GE invasion at the Universidad Nacional Autónoma de México, 7 February 2013.

- Mexico is the centre of origin of maize and the region with the greatest existing genetic diversity in this crop and its wild relatives.
- Mexican peasants plant about 100 billion maize seeds every year, representing 59 native landraces. They harvest 20 trillion grains of maize, all of it exposed to adaptive environmental forces during the season. Peasant women then select another hundred billion maize seeds for the following season's planting and the rest serves as food.
- We reject GE maize not only because of the threat it poses to world biodiversity but because of the likelihood of irreversible genetic contamination of native varieties; the certainty of seeds being concentrated in the hands of a few companies, making Mexican farmers captive consumers of their inputs and jeopardizing food security and sovereignty; the prospect that the history and culture of the diverse Mexican peoples will be destroyed, and many other considerations beyond the scope of science as such

References

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