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

Food and Democracy
Luzern
24/25 April 2009

Dr. Christoph Then

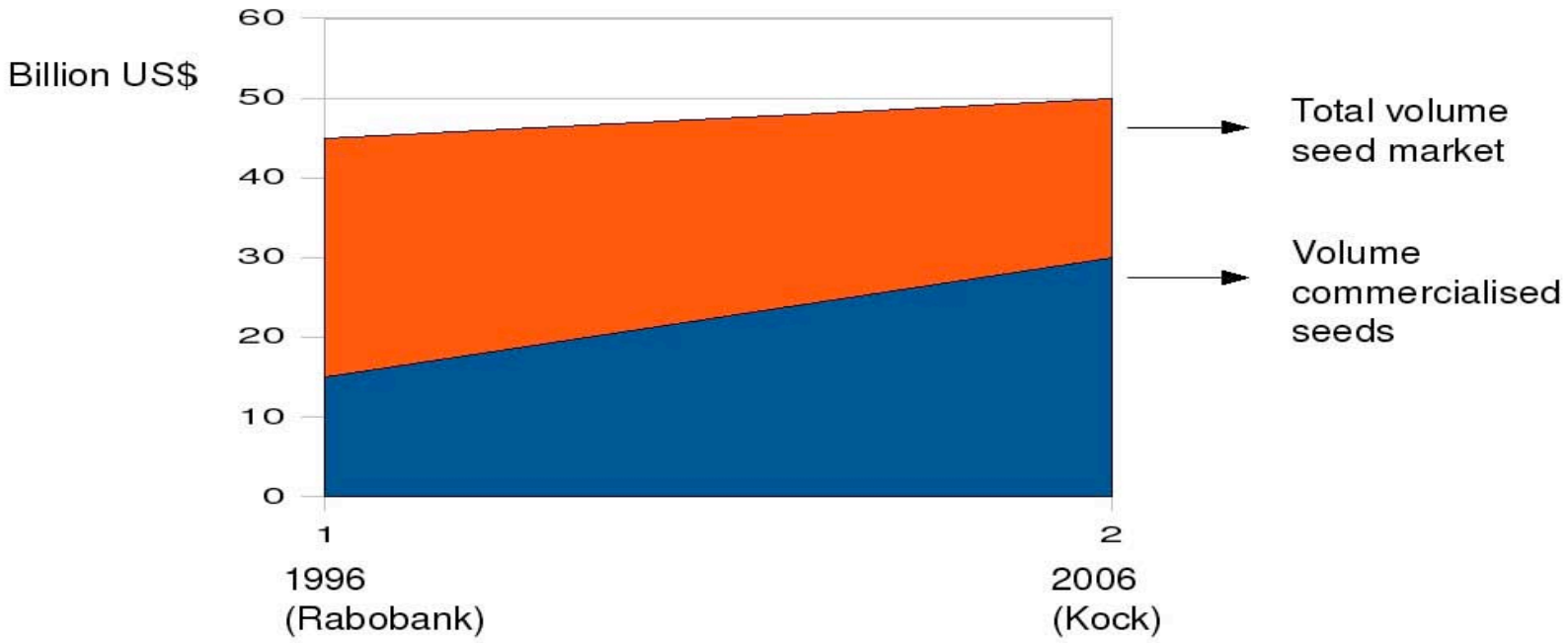
www.no-patents-on-seeds.org
www.scouting-biotechnology.net

Ten companies control about 2/3 of global market for seeds

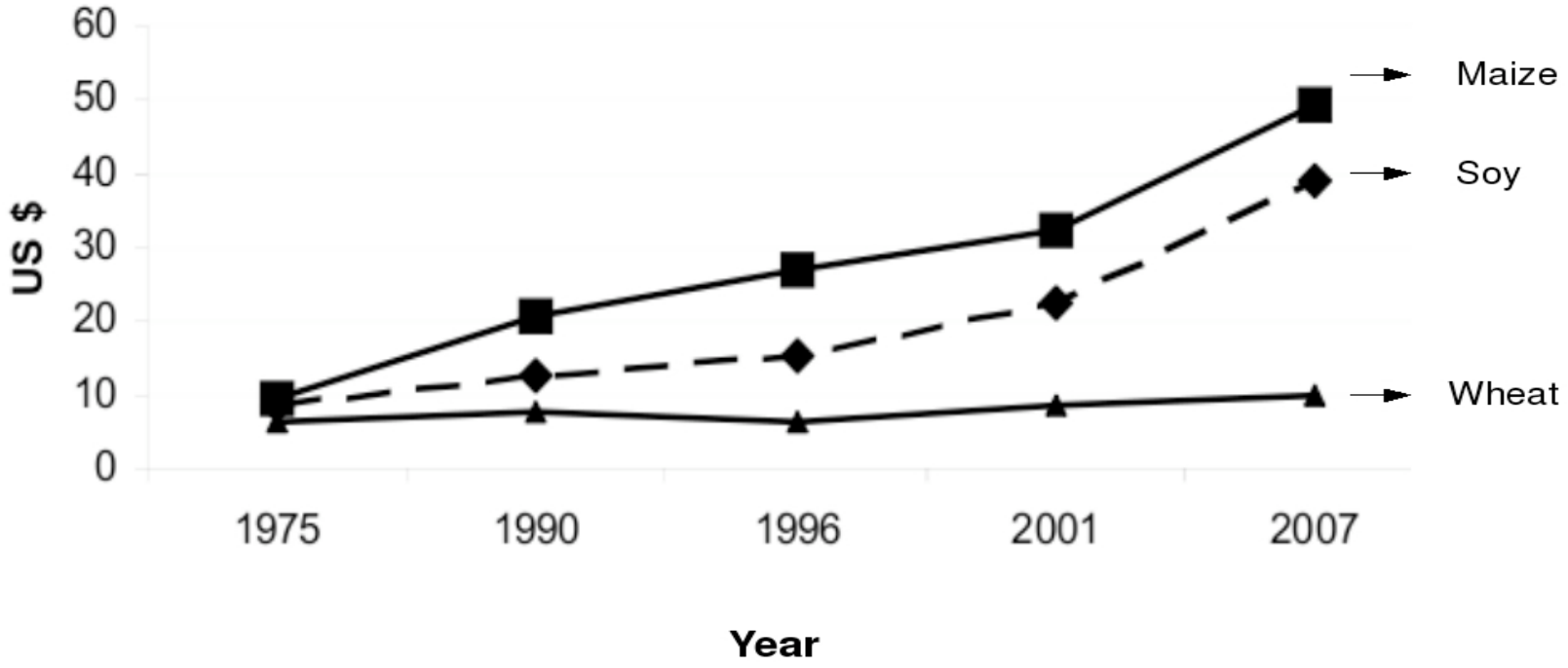
List of the top ten companies in seed business, 1983-2007

1983 (source: USDA)	1996 (source: Rabobank)	2007 (source: ETC Group)
Royal Dutch/Shell	Pioneer	Monsanto
Pioneer Hi-Bred	Novartis	DuPont
Sandoz	Limagrain	Syngenta
Cardo	ELM/Seminis	Groupe Limagrain
Asgrow	Takii	Land O' Lakes
DeKalb/ Pfizer	Suiker Uni/ Zeneca	KWS AG
ICI	DeKalb	Bayer Crop Science
SICA France Mais	Sakata	Sakata
Takii	KWS	DLF-Trifolium
Clause	Cargill	Takii

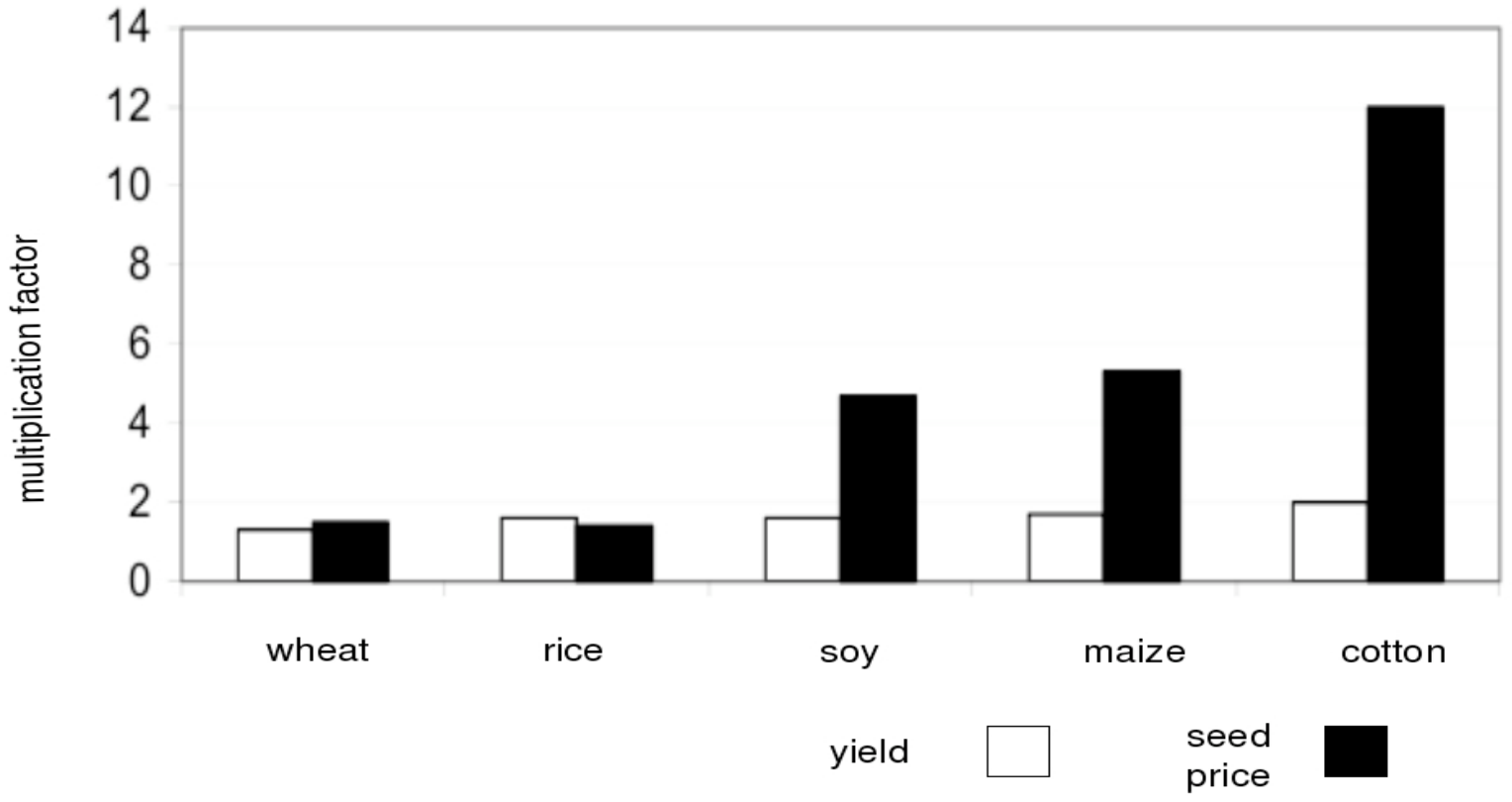
Increase of commercialised seeds, decrease of >informal seeds<



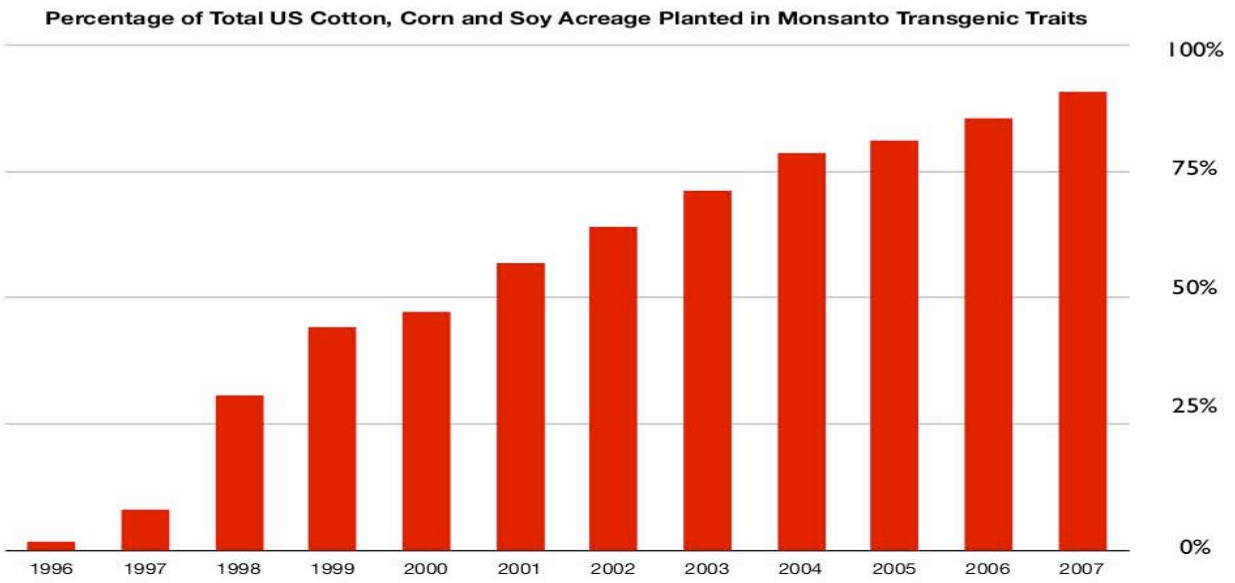
Rising prices in GE seeds (USA)_ ...



... but stagnating yields _



Predominant market position of a single company in GE seeds (USA)_



Antitrust procedure against Monsanto (USA)_

IN THE UNITED STATES DISTRICT COURT
FOR THE WESTERN DISTRICT OF TEXAS

TEXAS GRAIN STORAGE, INC. d/b/a WEST CHEMICAL & FERTILIZER, individually and on behalf of all others similarly situated,

Plaintiff,

v.

MONSANTO COMPANY,

Defendant.

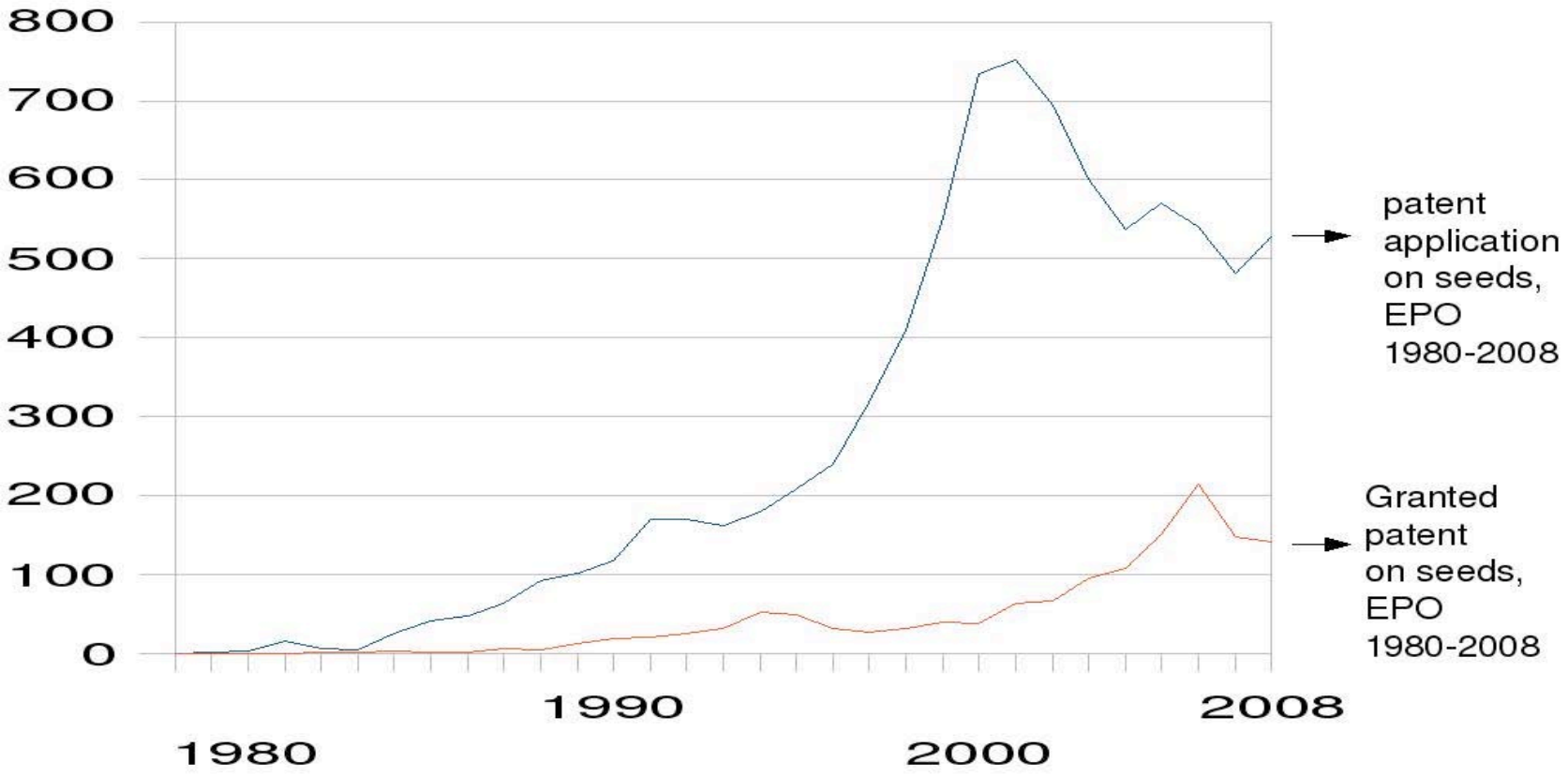
Case No: SA07CA0673O

CLASS ACTION

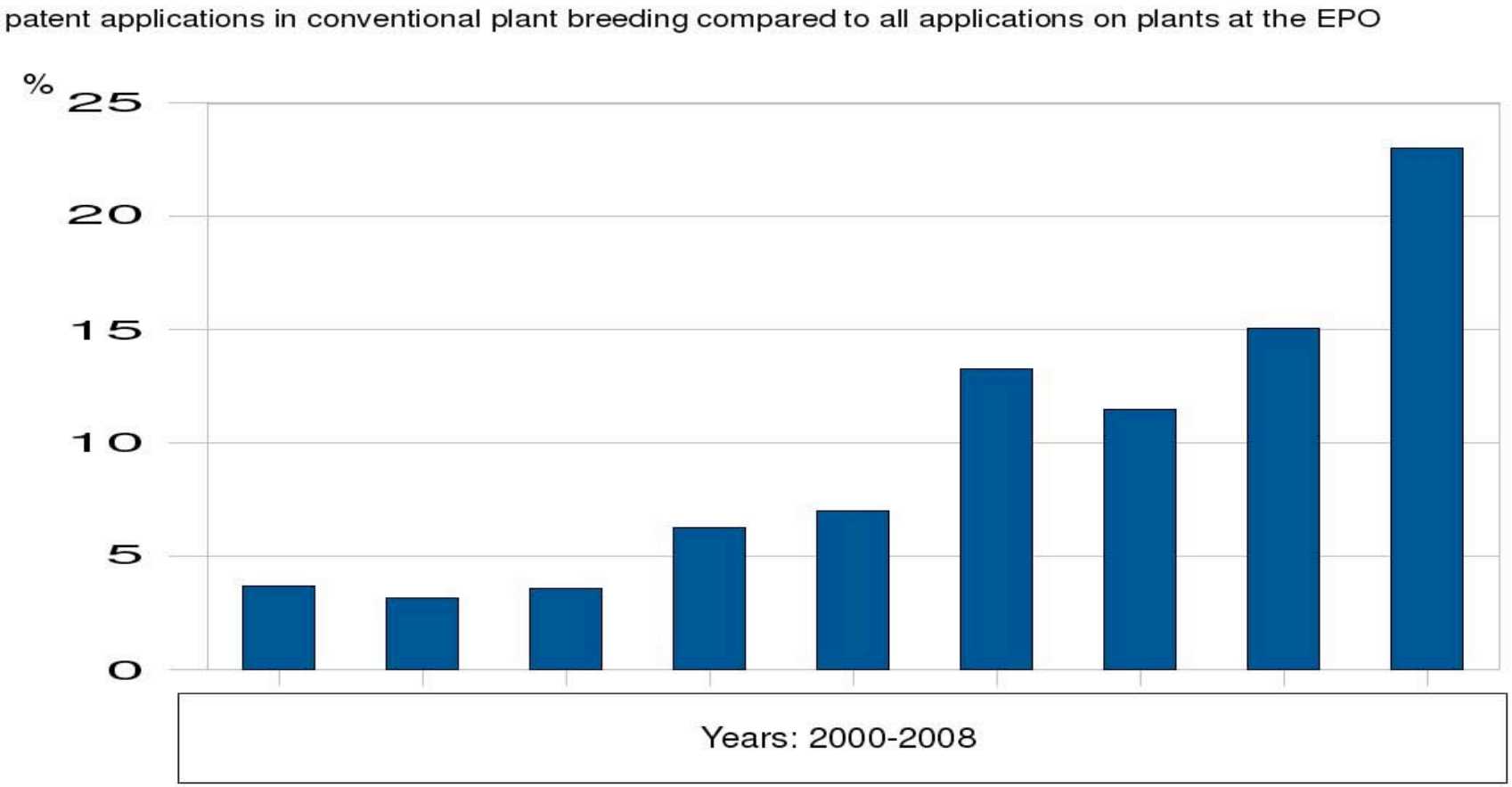
JURY TRIAL DEMANDED

COMPLAINT

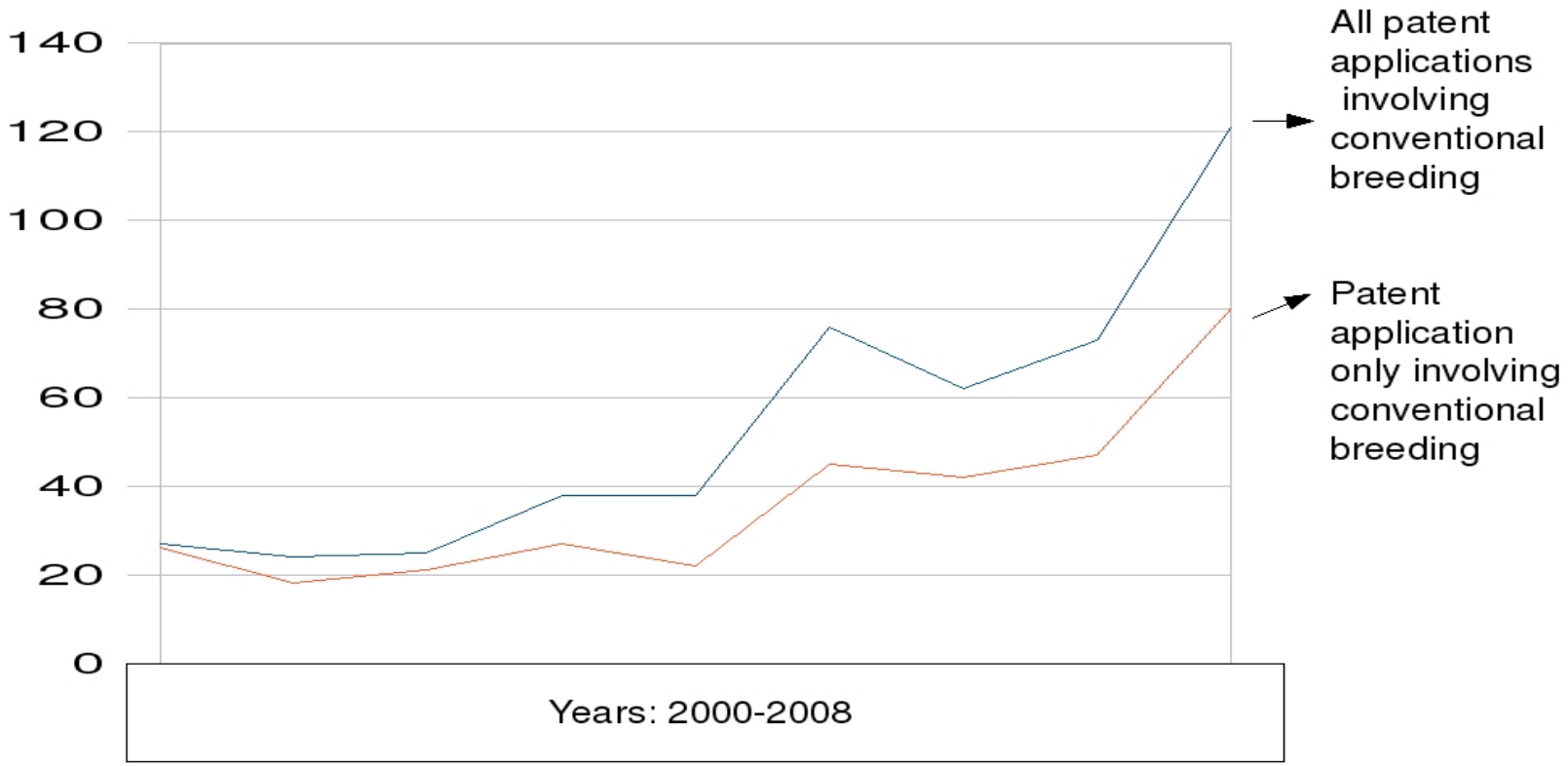
Patents by numbers (EPO):Decrease of applications in GE ....



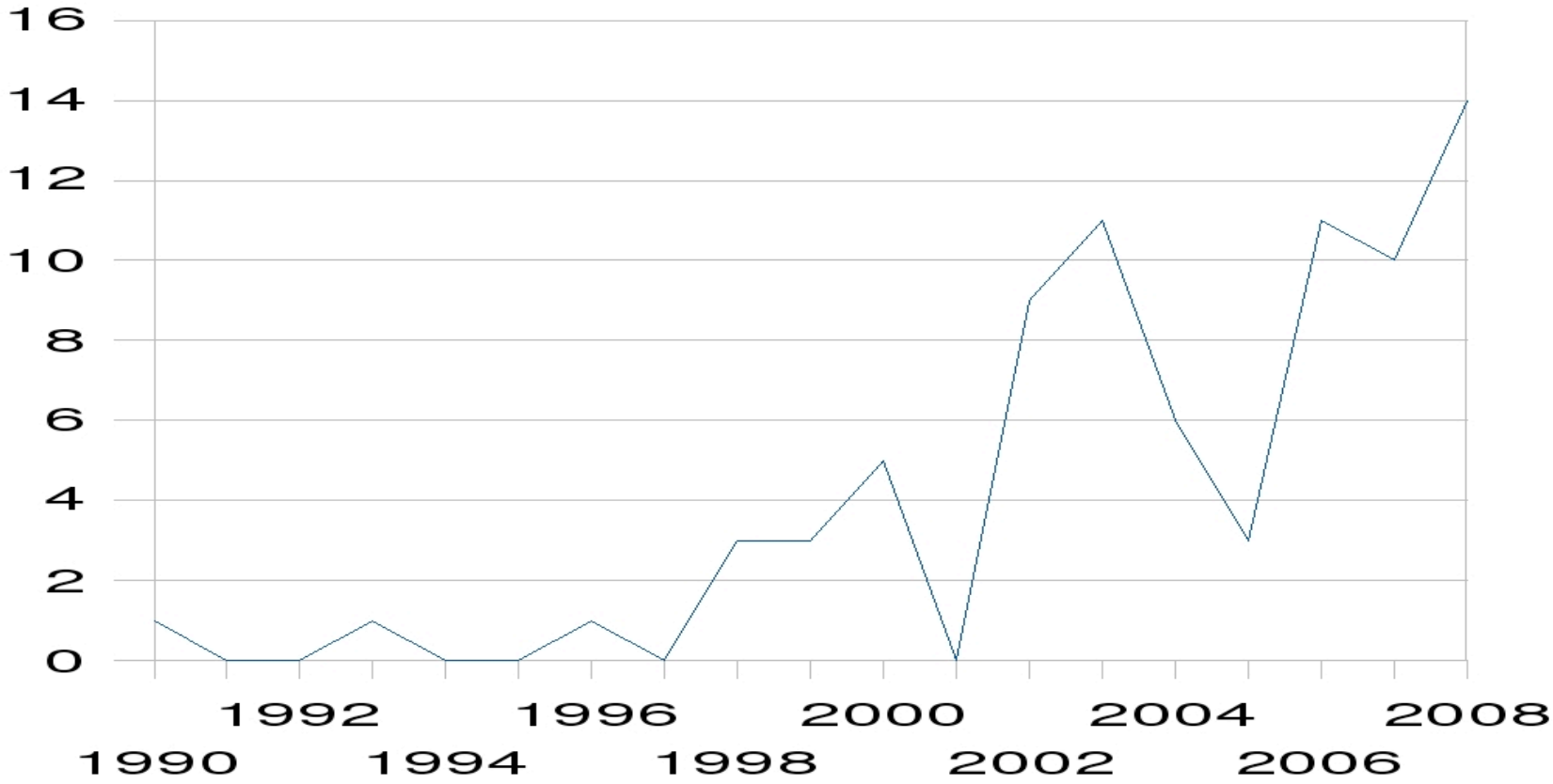
.... increase of applications on conventional breeding



Patents by numbers (EPO):Mixing GE with conventional breeding



Patents by numbers (EPO):Grant of patents on conventional breeding in plants



New trend in patents caused by technical limitations of genetic engineering

"Nonetheless, the frequency of success of enhancing the transgenic plant is low due to a number of factors including the low predictability of the effects of a specific gene on the plant's growth, development and environmental response, the low frequency of maize transformation, the lack of highly predictable control of the gene once introduced into the genome, and other undesirable effects of the transformation event and tissue culture process." (Monsanto, **WO 2004053055)**

"Most phenotypic traits of interest are controlled by more than one genetic locus, each of which typically influences the given trait to a greater or lesser degree" (Syngenta, **WO2008087208)_**

Some technical tools to turn plants into inventions

- measuring content of compounds in plants (such as oil or protein)_
- describing phenotypical features (such as number of leaves or size of plants, yield, growth, biomass)_
- detecting resistance against biotic or abiotic stress
- genomic screening for naturally occurring genetic conditions
- mutagenesis

Some technical tools to turn plants into inventions

Genetic fingerprinting: Genetic fingerprinting is not directed at specific, single regions of the genome, but reveals the distribution of general elements and structures in the genome. The results might be used for further comparison and statistical correlation with phenotypical characteristics.
Marker assisted breeding (MAB): Correlation of specific DNA sequences with wanted phenotypical characteristics.
Quantitative trait locus (QTL): This method tries to find correlations between genetic markers and genetic conditions (traits) that cannot be reduced to a single gene locus but are based on the interactivity of several parts of the genome.
TILLING (Targeting induced local lesions in genomes): This method is a kind of targeted mutagenesis. The plant is exposed to stimuli that can trigger mutations in the plant. The resulting plants are selected by screening.

New biopiracy on the fields

General principle: Describing existing biological diversity by simple technical tools, thus turning agricultural biological diversity (seeds, animals) into exclusive monopoly rights. Especially relevant for centres of biological diversity.

Patent law gets abused for misappropriation of basic resources for global food production.

This is especially relevant for countries of the south and centres of biological diversity.

Patent application WO2008021413: "*monsantosizing maize and soy*"

48. The method of claim 47, wherein the populations comprise a plant that is a crop plant selected from the group consisting of a forage crop, oilseed crop, grain crop, fruit crop, ornamental plants, vegetable crop, fiber crop, spice crop, nut crop, turf crop, sugar crop, beverage crop, tuber crop, root crop, and forest crop.

49. A corn plant, comprising at least 3 haplotypes selected from the group consisting of haplotypes 1241745, 1245282, 1243877, 1243070, 1245725, 1243531, 1243137, 1244818, 1242935, 1242692, 1243209, 1239247, 1242639, 1245002, 1242764, 1245051, 1242555, 1241471, 1243921, 1245245, 1239097, 1244707, 1240716, 1243724, 1240194, 1238977, 1239277, 1241428, 1241344, 1241584, 1243419, 1240798, 1239269, 1241694, 1244582, 1244051, 1242655, 1244350, 1240495, 1242169, 1241828, 1243958, 1241430, 1239542, 1240734, 1244381, 1239572, 1243540, 1239335, and 1240910.

Patent application WO2008021413: "*monsantosizing maize and soy*"

"the methods of the present invention can be used for breeding any non human organism. Specifically, the methods of the present invention can be used in breeding mammals, such as mice, swine, and cattle, and birds such as poultry or livestock." (page 1037)

Patent application WO2008121291 '*patent of monsantosizing biodiversity*'

"The genetic base of cultivated soybean is narrow compared to other field crops (...) Due to the narrow genetic base, soybean is more likely to be impacted by disease and insect attacks. (...) Exotic germplasm possesses such key traits as disease resistance, insect resistance, nematode resistance, and tolerance to environmental stress (...) Breeders create crosses between exotic and cultivated germplasm." (page 81)

Granted Patent EP0483514, '*the patent on tree breeding*', Advanced Technologies (Cambridge) Ltd

"A method of forest tree breeding wherein Restriction Fragment Length Polymorphism (RFLP) technology is applied to samples of tree material from a plurality of forest trees; the data derived from said RFLP technology is statistically analysed thereby to cluster genetically similar trees of said plurality of said trees; two of said trees of genetic diversity are selected based on the statistically analysed RFLP data; and a further tree or trees is/are derived from the two selected trees. " (Claim 1)

Application Greenpeace EP1975245 '*patent on politicians*' _

Broccoli: the precedent case (G2/07)

(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 1 069 819 B1

(12) EUROPEAN PATENT SPECIFICATION

(45) Date of publication and mention of the grant of the patent:
24.07.2002 Bulletin 2002/30

(21) Application number: **99915886.8**

(22) Date of filing: **08.04.1999**

(51) Int Cl.[7]: **A01H 5/10**

(86) International application number:
PCT/GB99/01079

(87) International publication number:
WO 99/52345 (21.10.1999 Gazette 1999/42)

(54) **METHOD FOR SELECTIVE INCREASE OF THE ANTICARCINOGENIC GLUCOSINOLATES IN BRASSICA SPECIES**

VERFAHREN ZUR SELEKTIVEN ERHÖHUNG DES ANTICARCINOGENEN GLUCOSINOLATE BEI BRASSICA SORTEN

PROCEDE PAR SELECTION D'ACCROISSEMENT DES GLUCOSINOLATES ANTICARCINOGENES DE LA BRASSICA

(84) Designated Contracting States:
AT BE CH CY DE DK ES FI GB GR IE LI LU MC NL PT SE
Designated Extension States:
AL LT LV MK RO SI

(30) Priority: **09.04.1998 US 81169 P**

(43) Date of publication of application:
24.01.2001 Bulletin 2001/04

(73) Proprietor: **Plant Bioscience Limited**
Norwich, Norfolk NR4 7UH (GB)

(56) References cited:
- **MITHEN, R.F. ET AL: "Glucosinolates of wild and cultivated brassica species" PHYTOCHEMISTRY, vol. 26, no. 7, 1987, pages 1969-1973, XP002110359 cited in the application**
- **CARLSON, D.G. ET AL.: "Glucosinolates in Crucifer Vegetables: Broccoli, Brussels Sprouts, Cauliflower, Collards, Kale, Mustard Greens and Kohlrabi" JOURNAL OF THE AMERICAN SOCIETY OF HORTICULTURAL SCIENCE, vol. 112, no. 1, 1987, pages 173-178, XP002110360 cited in the application**
- **FAHEY J W ET AL: "Broccoli sprouts: an exceptionally rich source of inducers of**

the broccoli case (G2/07)_

1. A method for the production of Brassica oleracea with elevated levels of (...) glucosinolates (...) which comprises:

(a) crossing wild Brassica oleracea species with Brassica oleracea breeding lines; and,

(b) selecting hybrids with levels (...) glucosinolates (...), elevated above that initially found in Brassica oleracea breeding lines.

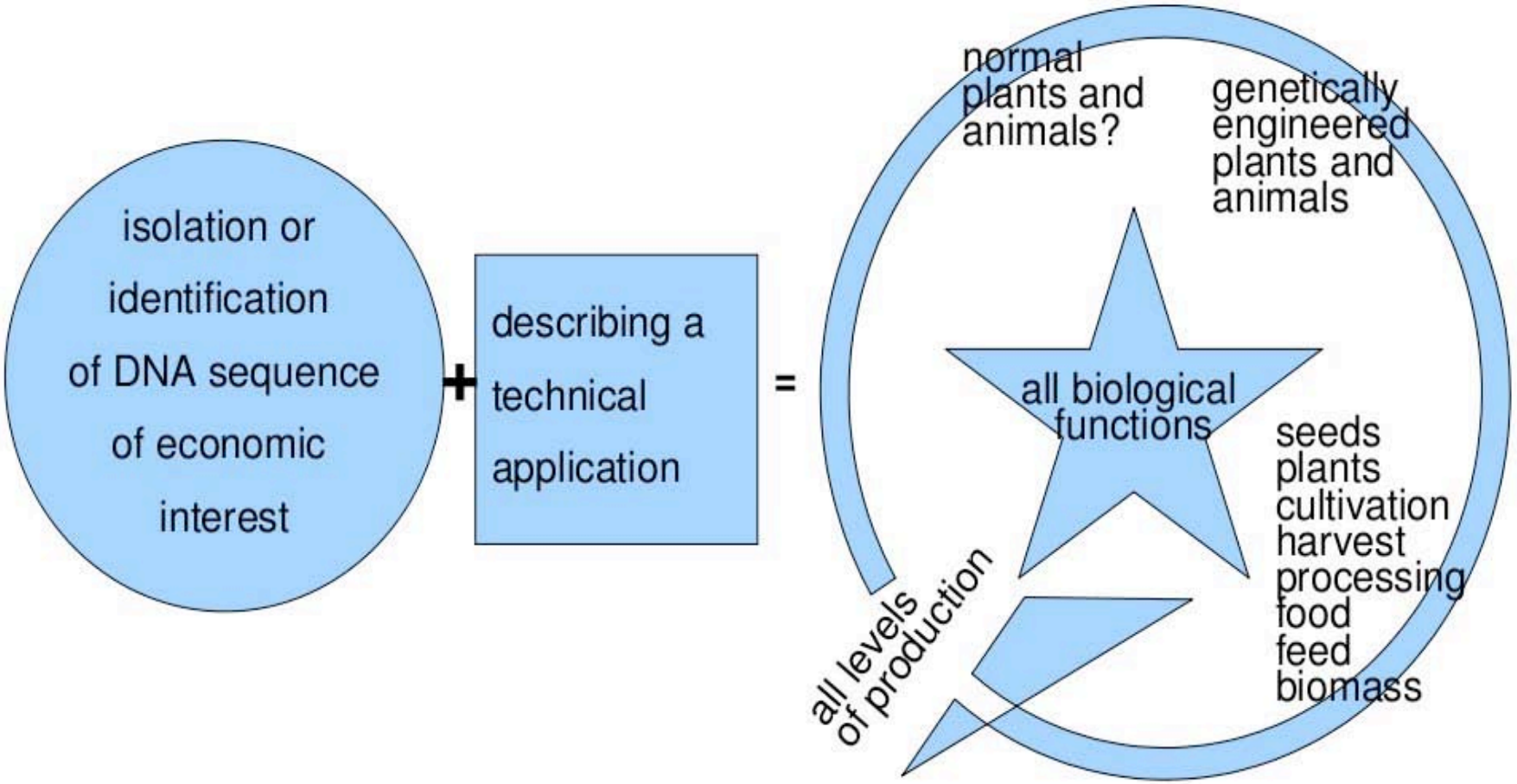
the broccoli case (G2/07)_

9. An edible Brassica plant produced according to the method (...)

10. An edible portion of a broccoli plant produced according to the method (...)

11. Seed of a broccoli plant produced according to the method (...)

The scope of patents in Europe



plant variety protection vrs. patents

- PVP rights are restricted to a distinct single variety, while patents cover whole range of species and classes.

- PVP system allows free access to any commercial traded seed for the purpose of further breeding (“breeders exemption”). Thus it works as a open source system for other breeders. Patents can block access to genetic resources to large extent.

plant variety protection vrs. patents

- Patents do not end as long as the patented genetic conditions can be found in any progeny. After crossing of plants there can be an increasing accumulation of patents.

- Patents allow claiming the whole chain of food production: Seeds, plants, cultivation, harvest and its processing are subjected to monopoly control.

EU Legal framework - patent on plants (Dir. 98/44)_

Article 4

1. The following shall not be patentable:

(a) plant and animal varieties;

(b) essentially biological processes for the production of plants or animals.

EU Legal framework - patent on plants (Dir. 98/44)_

Article 4

2. Inventions which concern plants or animals shall be patentable if the technical feasibility of the invention is not confined to a particular plant or animal variety

EU Legal framework - patent on plants (Dir. 98/44)_

Article 2:

A process for the production of plants or animals is essentially biological if it consists entirely of natural phenomena such as crossing or selection.

EU Legal framework - patent on plants (Dir. 98/44)_

Article 8

- 1. The protection conferred by a patent on a biological material (...) shall extend to any biological material derived from that ..

- 2. The protection conferred by a patent on a process (...) shall extend to biological material directly obtained through that process and to any other biological material ....

Enhancing food crisis?

Patents on seeds and farm animals are concerning most basic resources of food production.

More recently they also concern energy markets/ biomass production.

The patent holder controls both markets – who pays the price?

Need to act

“Because of the generally negative effects of patents in plant breeding, the UK Commission on Intellectual Property Rights explicitly advises developing countries to completely ban patents on plants and seeds.“

(UK Commission on Intellectual Property Rights, 2002, Integrating Intellectual Property Rights and Development Policy, http://www.iprcommission.org)_

Need to act

„If this trend isn't halted, some experts claim, tomorrow's supercrops may end up like many of today's medicines: priced out of the reach of much of the developing world's growing population. `We are headed down the same path that public-sector vaccine and drug research went down a couple of decades ago,´ says Gary Toenniessen, director of food security at the Rockefeller Foundation in New York.“

Crop improvement: A dying breed, Nature 421: 568-570, by Jonathan Knight, Feb 6, 2003

Need to act

IAASTD (International Assessment of Agricultural Science and Technology for Development), 2008:

"In developing countries especially, instruments such as patents may drive up costs, restrict experimentation by the individual farmer or public researcher while also potentially undermining local practices that enhance food security and economic sustainability. "

http://www.greenfacts.org/en/agriculture-iaastd/l-2/3-biotechnology-for-development.htm#0

Need to act

The European Group on Ethics in Science and New Technologies to the European Commission,
Opinion Nr. 24, Oktober 2008:

“The Group supports promotion of innovation in agriculture but is concerned about the impact of patents on agricultural crops.“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KEINE PATENTE AUF SAATGUT UND NUTZTIERE
Stopp der Enteignung von Bauern und Züchtern
Die zunehmende Patentierung von Saatgut, konventionellen Pflanzensorten und Nutztierrassen bedeutet eine weitgehende Enteignung von Bauern und Züchtern: Landwirte dürfen ihr Saatgut aus der Ernte nicht mehr zurückzubehalten und Züchter können mit dem patentierten Saatgut nur noch sehr eingeschränkt weiter arbeiten.
Das Europäische Patentamt (EPA) hat im Interesse der multinationalen Konzerne in den letzten Jahren die Patentierbarkeit immer stärker ausgeweitet und die bestehenden Verbote unterlaufen. Unsere Nahrungssicherheit liegt zunehmend in den Händen einiger weniger transnationaler Chemie- und Biotechnologie-Konzerne.
Jetzt befasst sich das Europäische Patentamt mit der Grundsatzfrage: Patente auf normale Pflanzen und Tiere!
Die Große Beschwerdekammer des EPA will am Fall eines Patentes auf Brokkoli (EP 1069819) grundsätzlich entscheiden, ob konventionelle Pflanzen patentierbar sind. Die Entscheidung (Fall T 0083/05) wird auch bindend sein für alle anhängigen Patentanträge und sogar für Nutztiere und deren Nachkommen. [Lesen Sie mehr]
In einem Globalen Aufruf an die Große Beschwerdekammer wenden sich die Organisatoren dieser Webseite, sowie zahlreiche Bauernverbände aus aller Welt gegen die Patentierung von konventionellen Pflanzen und Tieren.
WIR BITTEN ANDERE ORGANISATIONEN DIESEN AUFRUF AUCH ZU UNTERZEICHNEN ! Hier klicken !
the testcase
patentPig
UTVIKLINGSFONDET
SWISSAID
KEIN PATENT AUF LEBEN
MISEREOR IHR HILFSWERK
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GIMP
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der testfall
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Organisations are invited to sign the Global Appeal! **Click here!**

These are the signatories of the Global Appeal:

ARGENTINIA: Federación Agraria Argentina

ITALY: La Coldiretti

PERU: Confederación Nacional Agraria

BRAZIL: Federação dos Trabalhadores na Agricultura Familiar da Região Sul do Brasil

MEXICO: Asociación Nacional de Empresas Comercializadores de Productores del Campo

SPAIN: La Coordinadora de Organizaciones de Agricultores y Ganaderos

INDIA: BKS - Bharat Krishak Samaj

NICARAGUA: La Unión Nacional de Agricultores y Ganaderos

SWITZERLAND: Schweizerischer Bauernverband

Internet

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Demands and political activities

- ask farmer organisations to sign up “no patents on seeds“, distribute informations and contacts (such as newsletter)_

- take the issue to the European Parliament: Revision of Directive 98/44

- correct national legislation in member states of EPO

- demand other patent offices outside EU to decide against patents on plants and farm animals, start opposition case and political debate

- urge WTO to exclude living beings and genetic ressources from patentability

Thank you very much for your attention!

Informations:
www.no-patents-on-seeds.org
- www.keinpatent.de.
- www.greenpeace.de

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info@scouting-biotech.de