

Developing a Biosafety Law Lessons from the Kenyan Experience

Margaret Karembu, PhD
Director ISAAA AfriCenter
Nairobi, Kenya
m.karembu@cgiar.org
www.isaaa.org

AAMP Regional Workshop on Agricultural Journalism
June 30 – July 2nd 2010, Dar es Salaam, Tanzania

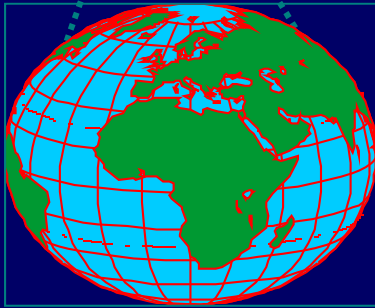
Presentation Outline

- ✓ Biotechnology and Biosafety Perspectives
- ✓ Why Biosafety Laws
- ✓ The Kenya Experience in developing a Biosafety Law
- ✓ Way Forward – some story angles



Biotech Communications' Environment

Biotechnology has generated a Network of Opinions



Miracle or
Monster?



and...varied perceptions on risks and benefits

..and then mass media sensations thro
Fantasies, Myths, Fairy tales...



Are you eating
science's mistakes??

Have created:

- ✓ Fear
- ✓ Anxiety
- ✓ Outrage
- ✓ Mistrust

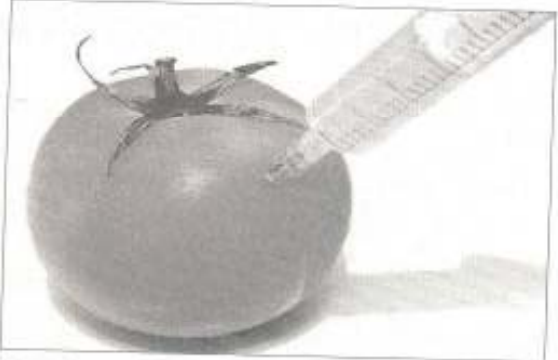
Kenya Times Traveller, Oct. 7, 2002

Tell Kenyans the truth about GMOs

THE Cartagena Protocol on Biosafety to which Kenya is a signatory, requires that the government promotes and facilitates public awareness, education and participation concerning the safe transfer, handling and use of Genetically Modified (GMOs) foods.

Similarly it requires that the government should consult the public in the decision-making process regarding the use of GMOs. As the Parliament re-opens this week, it is expected to debate Kenya's Biosafety Bill. The Agriculture minister William Ruto has said the Biosafety Bill includes provisions for the introduction of GMOs to Kenya.

I call upon all our representatives in Parliament, duly elected by the citizens of this country to take these requirements into account and to note that they have not been fulfilled. To some extent, it will require a lot of public awareness on



Kenyans have scanty information on the pros and cons on GMOs

consult the public in the decision-making process. Anything short of this flays the Cartagena Protocol and is a disservice to the Kenyan

Ruto to ask the public to come up with alternative solutions before he makes the public understand and

Leading to: Communication Difficulties

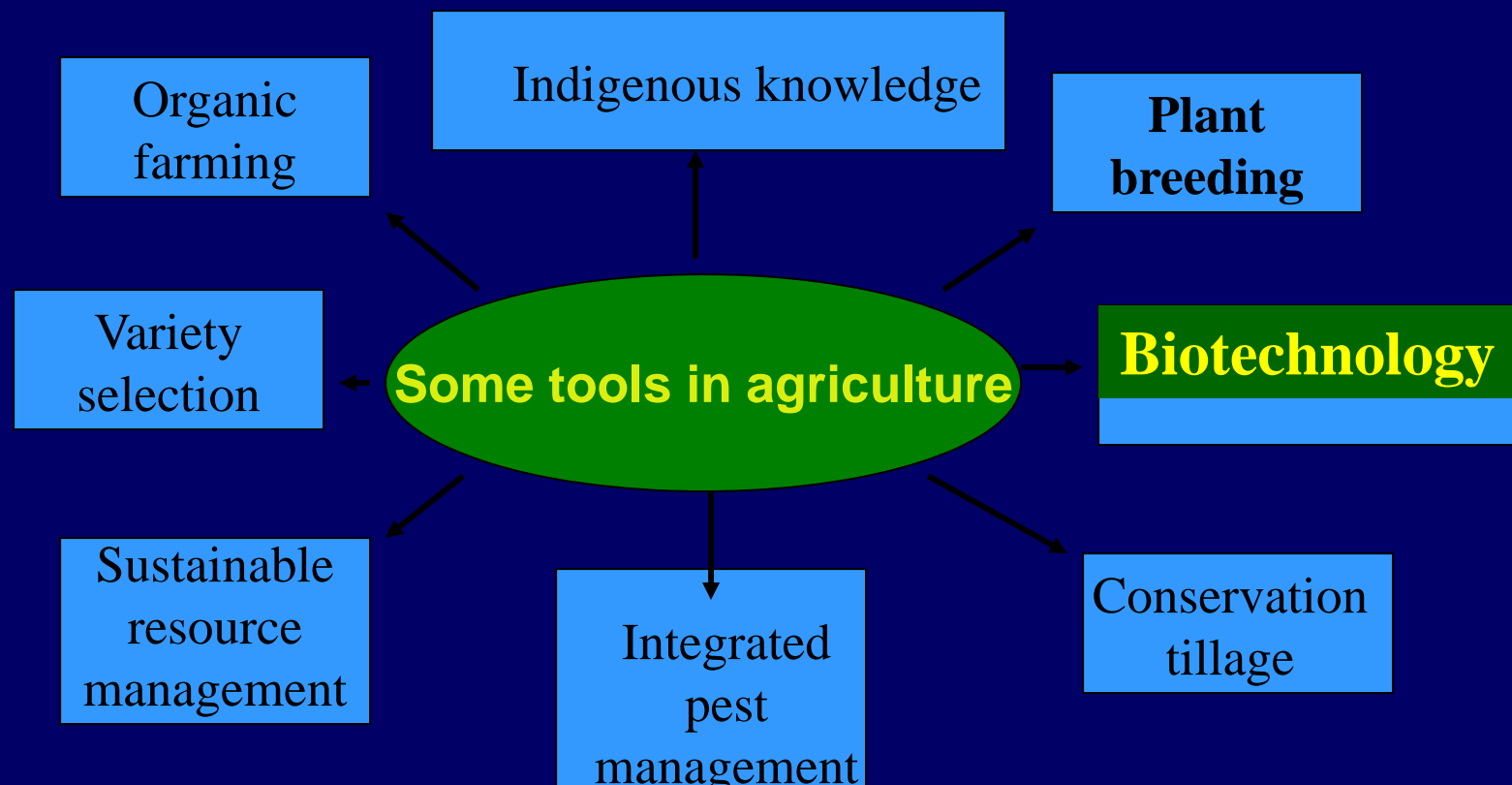


- ▶ Selective listening/writing
- ▶ Hearing things not said
- ▶ Emphasizing the negative
- ▶ Misinterpretations
- ▶ *Feelings overrule facts*

We cannot *not* communicate!

Real need to improve agricultural sector

Different Options



Note: Biotechnology provides tools; **NOT a SYSTEM** and will not replace traditional agriculture – **COMPLEMENTARITY IS KEY!**

Biotechnology



- What is Biotechnology?

Bios=life Technology=Techniques, tools

Any technique that uses a **living organism** or parts of those organisms to make or modify products or biological processes for a specific use

Branches of Biotechnology



Traditional Biotechnology

Bread-making, beer brewing,
Fermentation, yoghurts

Tissue Culture

Whole plants are produced
from plant parts under laboratory conditions –
rapid production of clean planting material

Marker-assisted breeding

Uses molecular markers to select for a particular
trait of interest

GENETIC ENGINEERING

Artificial insertion of one or more genes responsible for desired
trait into a plant or organism with precision

A lot
more
than
GMOS!

What is a GMO?

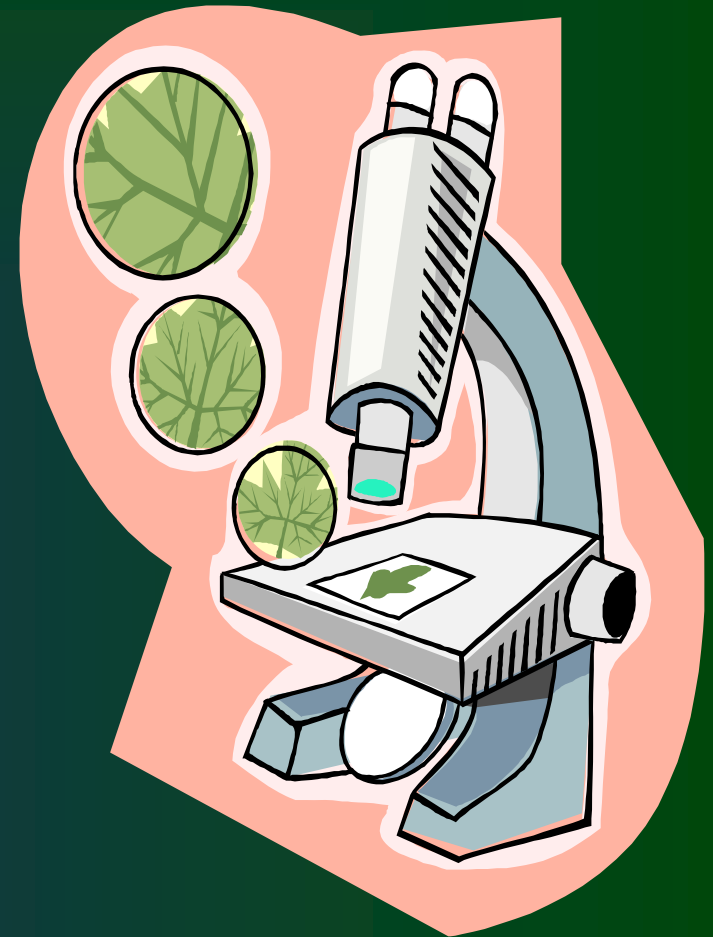


- Genetically Modified Organism or Transgenic Plant or Biotech crop
 - a plant containing transgene(s) that have been artificially inserted instead of acquiring them through natural other means
 - The transgenes (or inserted gene sequence) may come from another unrelated living organism

Biotechnology provides a set of tools:



- Gene transfer
- DNA detection
- DNA fingerprinting
- Genome analysis
- Genome libraries
- Cell culture
- Tissue culture, etc.
- Gene cloning



Why the society concerns?

- ▶ Perception that it is BIG SCIENCE, made by BIG INDUSTRY, to benefit only BIG FARMERS and needs supervision by BIG GOVERNMENTS
- ▶ Unfamiliar with the Technology
- ▶ Unaware of safeguards (Biosafety)
- ▶ Biased communication



Biosafety

...the avoidance of **risk** to human health and safety to the conservation of the environment, as a result of the use for research and commerce of genetically modified organisms
(CBD, Cartagena Protocol)

GM crops: Concerns



Fall into at least 4 categories:

- **Food and feed safety**
- **Environmental safety**
- **Economic**
- **Social/Cultural**

Important: Most of these concerns are not specific to GM, but apply to all agriculture and other technologies as well.

Basis of Biosafety Frameworks

is

The Cartagena Protocol on Biosafety

“sets out appropriate procedures, including, in particular, advance informed agreement, in the field of the safe transfer, handling and use of any living modified organism resulting from modern biotechnology that may have adverse effect on the conservation and sustainable use of biological diversity”.

Biosafety Framework

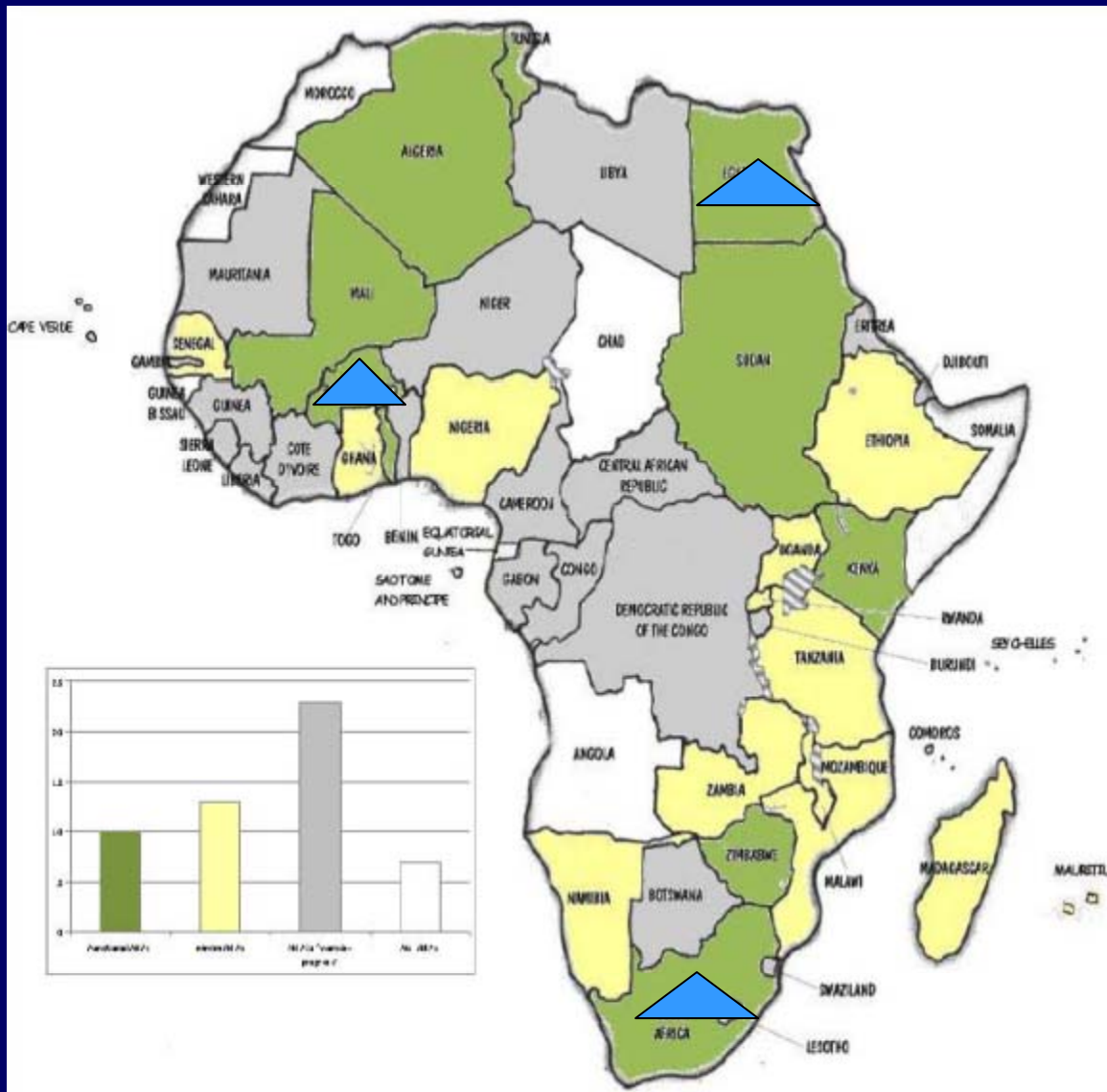


POLICY

REGULATORY
FRAMEWORK

INSTITUTIONAL
ARRANGEMENTS

Overview Biosafety and biotech crop planting



- **Biotech commercial**

South Africa -maize, cotton, soybean

Egypt -maize

Burkina Faso -cotton

- **Biotech crops on trial**

RSA - potatoes, wheat

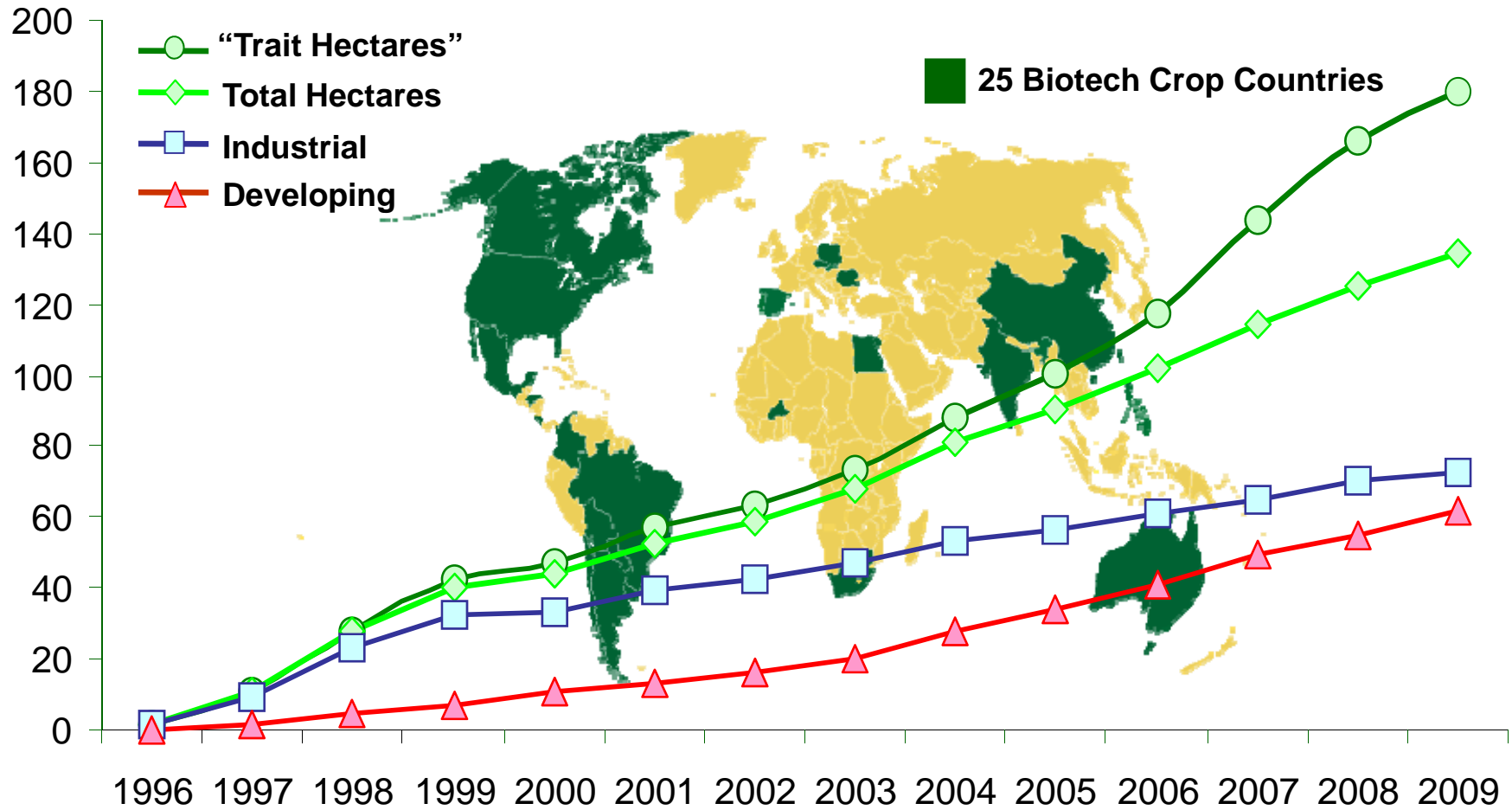
Kenya – cotton, maize

Egypt – cotton

Uganda- banana

Nigeria-cowpea, cassava

GLOBAL AREA OF BIOTECH CROPS Million Hectares (1996 to 2009)



A record 14 million farmers, in 25 countries, planted 134 million hectares (330 million acres) in 2009, a sustained increase of 7% or 9 million hectares (22 million acres) over 2008.

Justification for a Biosafety Law

- ▶ Need to take on-going research to the next level - commercializing products whose efficacy and safety has been proven scientifically for the benefit of farmers: Bt cotton and maize
- ▶ A comprehensive Biosafety legal framework that strikes a balance between ensuring vibrant development of biotechnology and safeguarding the interests of consumers and the environment

Kenya's Vision 2030 – Stipulates Science and Technology as key drivers to sustainable development

Scope of the Kenya Biosafety Act

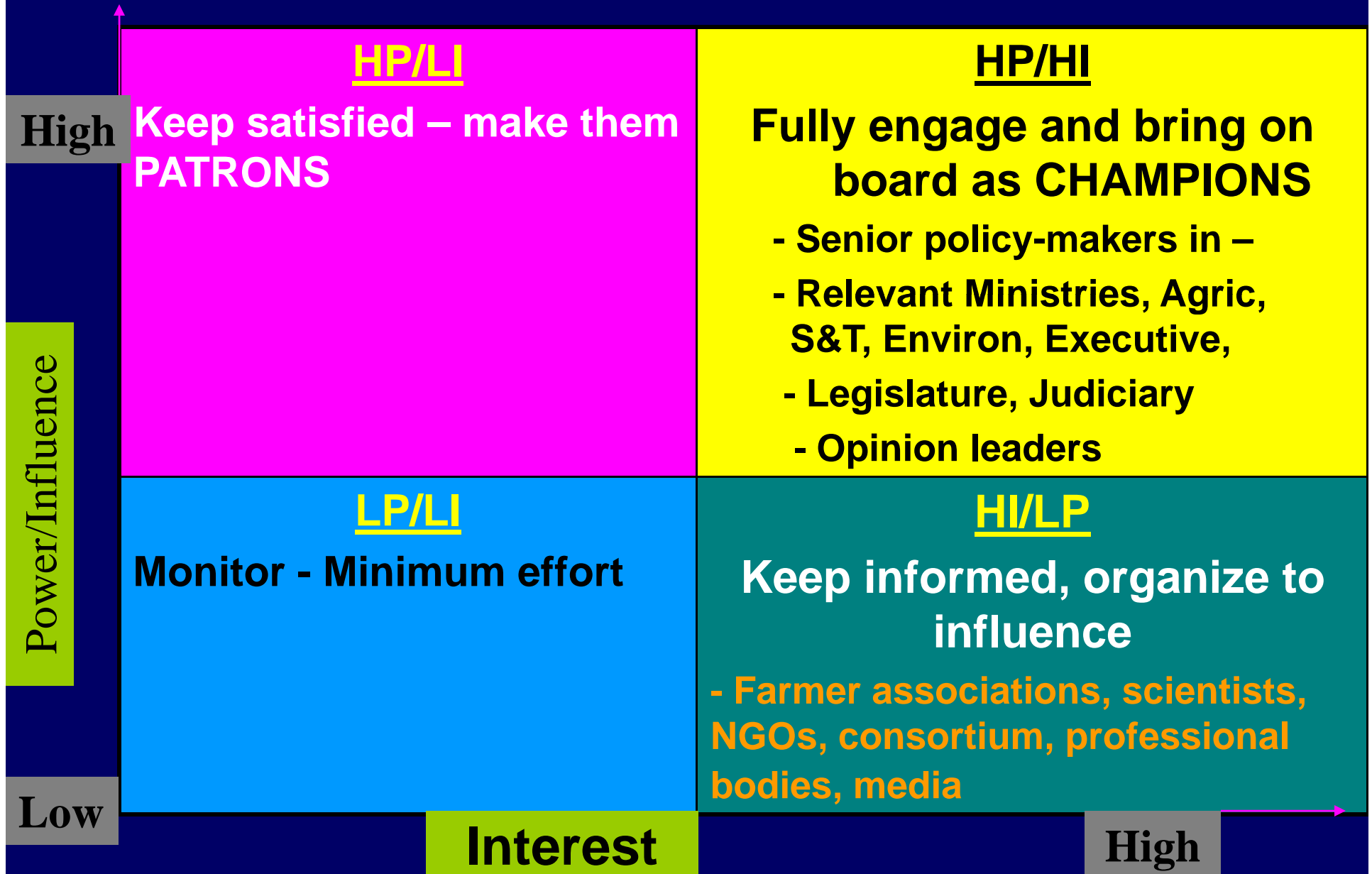
Does not cover genetically modified pharmaceuticals as they are already covered under the WHO guidelines of which the Ministry of Health has adopted

Provisions of Kenya Biosafety Act

- ▶ **Preliminary provisions** – Interpretations/Definition of terms/concepts conforms with international standards (part of global citizenry)
- ▶ **Administrative provisions** – Establishment of a National Biosafety Authority, autonomous and multidisciplinary (All inclusive)
- ▶ Handling requests and risk assessment – **5 sets of regulations for different activities** e.g. contained use, confined trials, environmental release, placing in the market, imports and exports

Stakeholder Engagement
Kenya Biosafety Law Process

Stakeholder Analysis – Influence map



Engaging each stakeholder group...what message, when, how, messenger-by who, means..



Formation of a Biosafety Consortium

Public/Government – *MOA, NCST, PBS, Univ. Research institutes*

NGOs – ISAAA (lead), ABSF, AHARVEST, AATF

Private sector – STAK, Farmer Associations

Mass Media Strategy

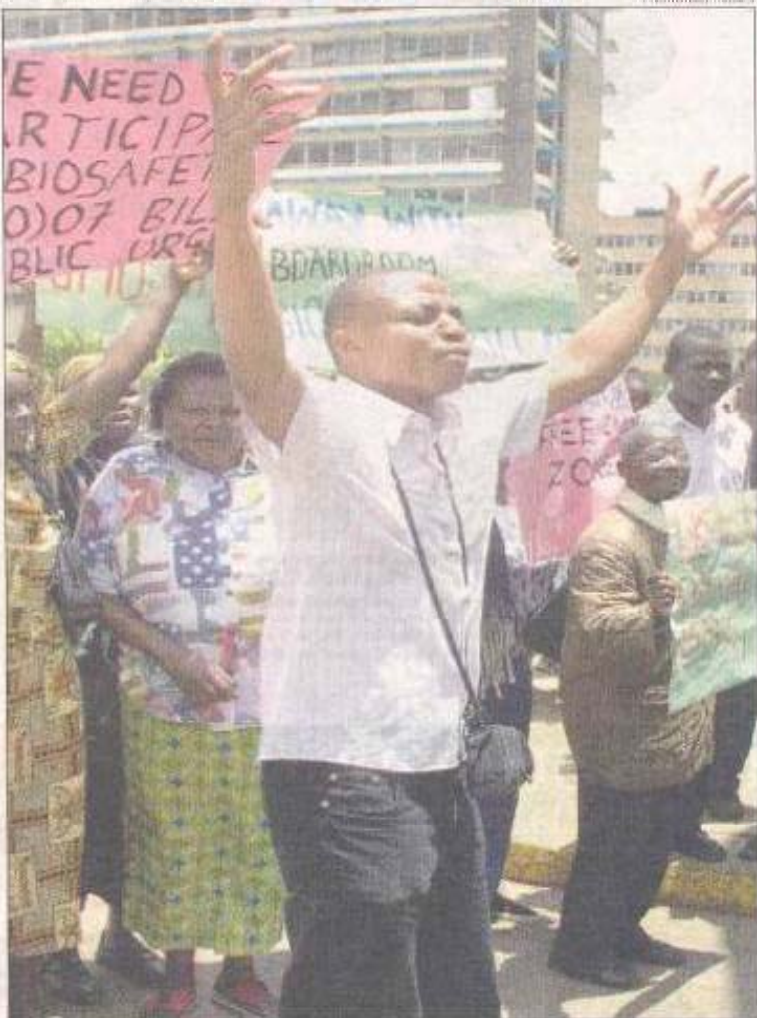
Where do Majority Stakeholders get information on biotech?

Ranked in importance (in East Africa)

1. Mass media – electronic & print (*radio highly effective*)
2. Special interest groups – *NGOs, industry*
3. Special media – *brochures, newsletters*
4. Experts – *Low*
5. Internet – *Very low*

Yet internet has been rated very highly in influencing policy!

BUT sample these Media headlines



DOWN WITH GMOs

A crowd demonstrates outside Parliament buildings yesterday against the Biosafety Bill. As the world celebrates World Food Day, biodiversity experts have urged President Kibaki not to assent to the Bill, which is still being debated by Parliament. They fear if the Bill is passed, it would make the country a dumping ground for foods and crops containing Genetically Modified Organisms.

Eating junk food may drive you crazy, Flavier says

Junk food lovers take heed. Munching your favorite chips may just earn you a ticket to the loony bin.

Sen. Juan Flavier warned the public yesterday that eating certain brands of potato chips and other genetically altered foods could cause severe health problems, even brain damage that may lead to permanent insanity.

Flavier, chairman of the Senate committee of health, raised the alarm on the new danger as he sought the enactment of a bill that will protect consumers from food products containing genetically modified organ-

isms (GMO).

He said the organisms of some products may have been made from vegetables that had genes artificially transferred from other plants to produce a new organism.

"Before Filipinos eat these foods, they should know whether or not they contain GMO which could have adverse effects on the body," Flavier said.

Citing a study made by British scientist Dr. Arpud Puzta, Flavier said rats fed with genetically modified potatoes suffered damage in the brain, liver, kidney and other vital organs.

Apart from possible brain damage, junk food eaters may be susceptible to allergies, be resistant to antibiotics and prone to cancer and other ailments.

— Perseus Echeminada

Sensational, anxiety

2 sided MEDIA story headlines

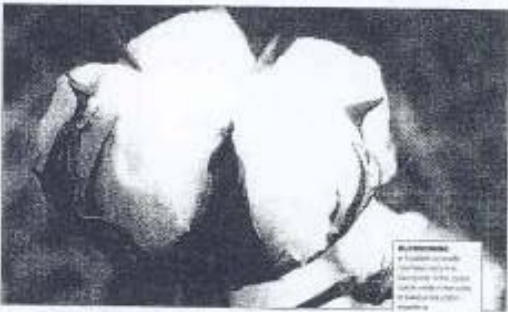
GM crops gaining popularity

By MARCO LARIC

It is now 12 years since the first commercial planting of genetically modified crops. Despite the widespread use of the safety and environmental controls of GM crops, the crops have not lived up to the hype. In 2007, the world's GM crop area was 18.1 million hectares, up from 17.1 million in 2006. The world's GM crop area is expected to reach 20 million hectares by 2012, according to a report by the International Service for Organic Agriculture (ISA).

The report also notes that the world's GM crop area is expected to reach 20 million hectares by 2012, according to a report by the International Service for Organic Agriculture (ISA).

The report notes that the world's GM crop area is expected to reach 20 million hectares by 2012, according to a report by the International Service for Organic Agriculture (ISA).



Genetically modified crops are becoming increasingly popular. The world's GM crop area is expected to reach 20 million hectares by 2012, according to a report by the International Service for Organic Agriculture (ISA).

Cloned eucalyptus is safe, say experts

THE Food and Agriculture Organization (FAO) has released a report stating that cloning eucalyptus trees will not affect the environment.

The report states that cloning eucalyptus trees will not affect the environment.

Experts say that cloning eucalyptus trees will not affect the environment.

Experts say that cloning eucalyptus trees will not affect the environment.

GMOs have failed to deliver - report

A report released on last month claims that genetically modified (GM) crops have failed to address the main challenges facing farmers around the world, and more than 70 percent of large-scale GM planting is still limited to two countries (US and Argentina).

The new report, *"Who Benefits from GM crops? An analysis of the global performance of genetically modified (GM) crops 1996-2006"* also notes that the "second generation" GM farm crops with attractive "traits" long promised by the industry has failed to appear.

"No GM crop on the market today offers benefits to the consumer in terms of quality or price, and to date these crops have done nothing to alleviate hunger or poverty in Africa or elsewhere," said in Nigeria Nnimmo Bassey of Friends of the Earth Africa.

"The great majority of GM crops cultivated today are used as high-priced animal feed to supply rich nations with meat," he added.

According to the report, GM crops commercialised today have on the whole increased rather than decreased pesticide use, and do not yield more than conventional varieties. The environment has not benefited from them, and GM crops will become increasingly unsustainable over the medium to long term.

The Friends of the Earth International report launch coincides with the annual release of the "Global Status of Commercialised

Conflicting advocacy, public confusion

1. Media-Scientists Linkages



- Training in:
 - Science communication
 - Reporting biotechnology
 - Risk communication

Lesson 1: Build capacity and invest in good relations with credible journalists for increased and balanced reporting

BIOTECHNOLOGY
RACHAEL WAKIO

Genetically modified food imports an abomination

THE WAVE OF CIVILISATION witnessed in the last 200 years is a direct result of the application of science and technology. From communications and travel to construction and manufacturing, the juggernaut marches on. But throw in food and the situation becomes very ugly.

The science of genetically modified organisms (GMOs) was devised to usher in a new era of food sufficiency the world over. Instructively, the masses edging the scientists forward did not know that it is not the work of science to determine what we eat, why we eat, when we eat or even how we eat.

From time immemorial, food has been about sustenance, health, culture and religion. The four have marched hand-in-hand from the Stone Age. And the age of the silicon chip is not about to stop it simply because it can't.

Let us look at what this means to Kenya in our present circumstances.

FIRST, IT IS NO LONGER A SECRET that some politicians have connived to import and dump into the country GMO maize in the guise of eradicating the effects of famine.

Early this week, Public Health minister Beth Mugo told the country that the contaminated maize had already been condemned by her ministry, and that it was not even fit for animals. She also said the maize was hurried from the port in the secrecy of darkness.

Forget about the Kenya Biosafety Act, which was signed into law two months ago. As Kenya Biosafety Authority, the supposed regulator stipulated in the Act, is not even in place.

Right now, we only have a small body known as the National Biosafety Commit-



Maize researcher at a model farm; What kind of seeds are Kenyans planting?

tee in the Ministry of Higher Education pretending to do the work the authority is supposed to do.

Simply put, the committee, which is staffed by bureaucrats, does not have the wherewithal to do the work of a key national regulatory authority. Food is a universal product and Kenyans have the right to know exactly where they are being taken by GMO proponents.

Indeed, they were supposed to be asked if they wanted GMO technology in the first place. This did not happen. They were not even told what the whole technology was all about. As a result, there are many sections of society in Kenya who are at risk of GMOs.

Intermixing of genes from various plants or animals into another element means that any Kenyan with an allergy to a certain substance will no longer know what he or she is eating. This is a grave danger because medical studies have proved that some allergies can be fatal.

If you are allergic to pumpkins, how will you know that the maize flour at the supermarket is not derived from maize

with genes extracted from a pumpkin to enhance its nutrient content? What about the Muslim who will not know what product contains the gene of a pig? What about the Hindu who will not eat cow products?

This technology can remove a gene of a horse and plant it in sorghum, which has actually been done successfully. The prospect that we face today is that the cultural and religious contexts of food as we know them are being altered in laboratories.

Besides religious freedoms and other sacrosanct cultural tenets, the proliferation of GMOs will bring about unprecedented health complications.

Let us ask ourselves why advanced economies like China, France, Germany and Canada have banned GMOs. Why are these economies citing regulatory problems, and yet they are light years ahead of us in terms of capacity?

IN THE WORLD OF PHARMACEUTICALS where genetic technology is rampant, we have already seen individuals developing resistance to medicine because of constant use of GMO-induced drugs.

In GMO, chemical implants are introduced into plant and animal genes to enhance their capacity to fight insects and infections. Bringing the same technology to farming means that we will be eating chemical-laden food every day, thus creating even greater resistance to drugs.

We have not even mentioned peasant farmers, who, thanks to the terminator technology, will be at the mercy of seed manufacturing conglomerates. Hasn't anyone in high office realised that we have just made an awful decision?

Ms Wakio works with an international development agency in Nairobi.

When will effective science reporting take its pride of place in our media houses? This article is full of factual errors!

2. Scientific live shows



Lesson 2: Demystify biotechnology issues by exposing stakeholders to biotech processes & products

3. Study tours - traveling workshops



Stakeholders visit Bt cotton
Confined Field Trials in Kenya



**Members of
Parliament,
Journalists,
Farmer
leaders
visit
biotech
facilities in
the country**



**Farmer-to-farmer
visits to S. Africa, Burkina**



Lesson 3: Invest in seeing-is-believing study tours to enhance appreciation of research efforts & confidence with local expertise

4. Politicians and Scientists Workshops



Lesson 4: Politicians are very strong opinion shapers. For policy influence, scientists and parliamentarians must engage!

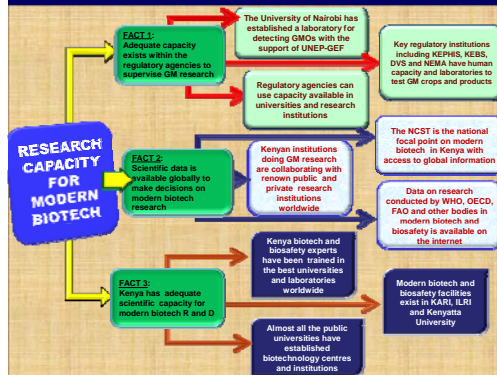
5. Regular (monthly) stakeholder dialogue



Open Forum on Agricultural Biotechnology – OFAB
2-hour session every last Thursday of the month: scientists,
specialists, policy makers and the media have a platform to
network and share knowledge

*Lesson 5. Interpersonal communication very effective in building trust
and strengthening inter-institutional networking*

6. Simplified educational materials



Pocket Ks (Local languages)



Newsletters – BiotekAfrica, Crop Biotech
Topical Newsbriefs, Brochures

Pocket Ks – Localised/translated

Message Maps – Key areas of interest

Calendar – Biotech info & education



Lesson 6: Improve stakeholders understanding of biotech/biosafety issues and trends with simple, localized IEC materials - consistency

Support to National Biotech Awareness Creation Strategy



Launched: September 25th
2008

by Minister for Agriculture

Hon. William Ruto on behalf
of Agricultural Sector
Coordinating Unit (ASCU)

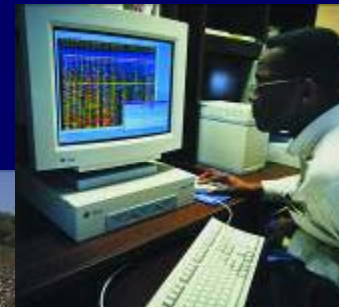


Putting message into context

Communicating along development path of a new biotech (GM) crop



Farmer release (seeds)



Extensive risk assessment



Field testing



Glasshouse



Laboratory

Biosafety regulations applied at each stage

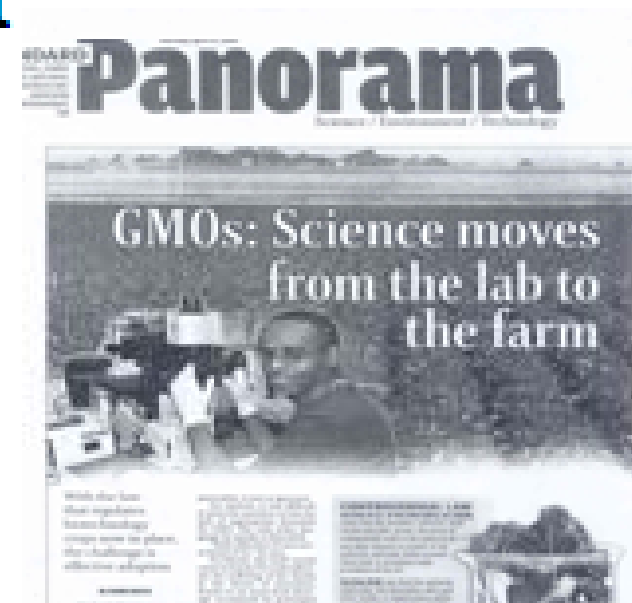
Source: PBS Docs, ISAAA collections.

Tip on dealing with experts

Why Scientists are reluctant to talk to media:

- **misunderstood,**
- **misquoted,**
- **quoted out of context**

So, earn their trust!



GMOs: Experts poke many holes into law on sector

WASHINGTON (AP) — A coalition of scientists and consumer groups has filed a lawsuit with the U.S. District Court in Washington, D.C., challenging the federal government's approval of genetically modified organisms (GMOs) for sale in the United States. The lawsuit, filed by the Center for Food Safety and the Center for Science in the Public Interest, alleges that the U.S. Department of Agriculture (USDA) and the U.S. Food and Drug Administration (FDA) have failed to adequately protect consumers from the potential risks of GMOs. The lawsuit also claims that the government has violated the National Environmental Policy Act (NEPA) by not conducting a thorough environmental impact study of the GMO industry.

The lawsuit is part of a broader effort by the coalition to challenge the government's approval of GMOs. The coalition has also filed a lawsuit with the U.S. District Court in San Francisco, California, challenging the government's approval of GMOs for sale in California. The lawsuit in San Francisco also alleges that the government has failed to adequately protect consumers from the potential risks of GMOs and has violated NEPA.

The coalition of scientists and consumer groups has filed a lawsuit with the U.S. District Court in Washington, D.C., challenging the federal government's approval of genetically modified organisms (GMOs) for sale in the United States. The lawsuit, filed by the Center for Food Safety and the Center for Science in the Public Interest, alleges that the U.S. Department of Agriculture (USDA) and the U.S. Food and Drug Administration (FDA) have failed to adequately protect consumers from the potential risks of GMOs. The lawsuit also claims that the government has violated the National Environmental Policy Act (NEPA) by not conducting a thorough environmental impact study of the GMO industry.

The lawsuit is part of a broader effort by the coalition to challenge the government's approval of GMOs. The coalition has also filed a lawsuit with the U.S. District Court in San Francisco, California, challenging the government's approval of GMOs for sale in California. The lawsuit in San Francisco also alleges that the government has failed to adequately protect consumers from the potential risks of GMOs and has violated NEPA.

The coalition of scientists and consumer groups has filed a lawsuit with the U.S. District Court in Washington, D.C., challenging the federal government's approval of genetically modified organisms (GMOs) for sale in the United States. The lawsuit, filed by the Center for Food Safety and the Center for Science in the Public Interest, alleges that the U.S. Department of Agriculture (USDA) and the U.S. Food and Drug Administration (FDA) have failed to adequately protect consumers from the potential risks of GMOs. The lawsuit also claims that the government has violated the National Environmental Policy Act (NEPA) by not conducting a thorough environmental impact study of the GMO industry.

Some Story Angles

- ▶ What does enactment of the Biosafety Act mean for Kenya, the region?
- ▶ What agri-business opportunities will come out of this development?
- ▶ What is the level of country/region preparedness for biotechnology - human and scientific capacities, administrative, policy etc
- ▶
- ▶ What impact is expected on research and commercialization of genetically modified/biotech crops and products?
- ▶ How does the public perceive the law - socio-economic, political, ethical and environmental impacts?
- ▶ What are the future implication of legislation informing biotechnology?

The ISAAA Network Centers

www.isaaa.org/kc

Thank you!



AmeriCenter

**AmeriCenter,
Cornell
University, 417
Bradfield Hall,
Ithaca NY 14852,
USA**

India Office

AfriCenter

**AfriCenter, c/o CIP,
P.O. Box 25 171 00603,
Nairobi, Kenya**

SEAsiaCenter

**SEAsiaCenter, c/o
IRRI, MCPO Box
3127, 1271 Makati
City, The Philippines**

ISAAA: International Service for the Acquisition of Agri-biotech Applications