

**UNDERSTANDING THE IMPACT OF
GENETICALLY MODIFIED CROPS**

IN AFRICA



AN ACTIVIST'S HANDBOOK



The African Centre for Biosafety (ACB) is a non-profit organisation based in Johannesburg, South Africa. It provides authoritative, credible, relevant and current information, research and policy analysis on genetic engineering, biosafety, biopiracy, agrofuels and the Green Revolution push in Africa.

©The African Centre for Biosafety
PO Box 29170, Melville 2109 South Africa
Tel: +27 (0)11 486 1156
www.acbio.org.za

Design, layout and illustration:

Dudu Coelho
www.duducoelho.com

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Understanding the impact of genetically modified crops in Africa

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ABBREVIATIONS AND ACRONYMS

AATF	African Agricultural Technology Foundation
ACB	African Centre for Biosafety
ADM	Archer Daniels Midland
AGRA	Alliance for the Green Revolution in Africa
AHTEG	Ad Hoc Technical Expert Group on Risk Assessment and Risk Management
AIA	Advance Informed Agreement
ARC	Agricultural Research Council
AU	African Union
BAT	Biosafety Assessment Tool
BCH	Biosafety Clearing-House
BSP	Biosafety Protocol
Bt	crops engineered for pest resistance
CBD	Convention on Biological Diversity
CBI	confidential business information
CEC	Crop Estimates Committee
CIMMYT	International Maize and Wheat Improvement Centre
COMESA	Common Market for Eastern and Southern Africa
COP	Conference of the Parties
EC	Executive Council
ECOWAS	Economic Community of West African States
FAO	Food and Agriculture Organisation
FFP	food, feed or processing
FSANZ	Food Standards Australia/New Zealand
GDP	Gross Domestic Product
GE	genetically engineered
GM	genetically modified
GMO	genetically modified organism
ha	hectares
IPRs	intellectual property rights
ISAAA	International Service for the Acquisition of Agrobiotech Applications
MOP	Meeting of the Parties
MSG	monosodium glutamate
MT	Metric Ton
NBF	National Biosafety Framework
NEPAD	New Partnership for Africa's Development
NGO	non-governmental organisation
OAU	Organisation of African Unity
PAIA	Promotion of Access to Information Act
PAJA	Promotion of Administrative Justice Act
PAN	Pesticide Action Network
PASS	Program for Africa's Seed System
ProGRA	Programs for a Green Revolution in Africa
REC	Regional Economic Community
SA	South Africa
UN	United Nations
USAID	United States Agency for International Development
WEMA	Water Efficient Maize for Africa project
WHO	World Health Organisation



ABOUT THIS HANDBOOK

This handbook is a training tool for those concerned about the proliferation of genetically modified (GM) crops in their countries and wishing to engage in the biosafety and government decision-making process. This is not a handbook for regulators. Since each country has its own policy and regulatory procedures governing genetically modified organisms (GMOs), the handbook aims to provide guidance on what the engagement with national biosafety systems may entail. We draw on the principles and provisions of the Cartagena Protocol on Biosafety, the African Model Law on Biosafety and trends noted in the course of our critique of several African biosafety frameworks. The handbook also draws on the African Centre for Biosafety's (ACB's) considerable experience with monitoring GMO applications in South Africa, our interrogation of and interaction with biosafety processes in South Africa and the production of independent risk assessments.

The handbook is designed to assist civil society to critically analyse domestic biosafety laws and provide guidance to track GMO applications step by step and on a case-by-case basis; how to prepare and publicise objections to GMO applications and mobilise the media and general public. Many African countries are already experiencing a tremendous influx of GMOs entering their countries as food aid or imported deliberately for direct use as food, animal feed and processing. Once applications are granted for the commercial release of GM crops, the pace of new permits being sought and granted may be quite rapid. The key is to be prepared; to know and understand the systems and what your rights are; to access information in a timely manner; to know and understand the sector and its stakeholders; to monitor and understand the trends; and to be ready to spring to action at the right time.

We have conceptualised this handbook to assist you to:

- ◆ carry out the relevant and necessary background research in order to engage meaningfully with the biosafety regulatory process in your country;
- ◆ engage with regulators, decision makers, and experts;
- ◆ mobilise with civil society; and
- ◆ interact with the media.

RESOURCE PACK

This handbook forms part of a resource pack which includes a CD-ROM containing a wide variety of papers on GM crops. Articles on the disc are numbered in accordance with the order in which they are referred to in this handbook. The resources provided on the CD are listed in Annexure 1 of the handbook.

Look out for the following icons – they will guide you to use the material effectively:



Outcomes



Handouts



Exercise



Links



Excerpt available on the Reading CD/Further reading on the CD

The bulk of the information in this handbook has been drawn from research papers that the ACB has produced over the last seven years. We have used excerpts from these throughout the handbook and have provided the full readings on the accompanying CD. In addition, you will find links to useful websites and further reading in each section of the handbook. It is our hope that these resources will be used to generate handouts, presentations and exercises for workshops that you will participate in or organise in the future. A number of exercises are suggested in each section of this handbook, and resources are provided to assist with completing the exercises.



Every ACB paper on the CD is also available on our website: www.acbio.org.za

HOW THIS HANDBOOK IS ARRANGED

The handbook comprises five main sections. In the first section, *Know the field and articulate your position*, we introduce the current paradigms within which global agriculture exists and the context within which GM based agriculture is situated. We also introduce genetically modified organisms and their status, both globally and in Africa, and examine the driving forces behind the GMO push in this continent. Finally, we discuss the potential risks of GMOs and salient biosafety issues.

The second section, *Familiarise yourself with the regulatory issues*, begins with a brief discussion of the Cartagena Protocol on Biosafety (the Biosafety Protocol) developed under the United Nations' Convention on Biological Diversity. The Biosafety Protocol regulates the transboundary movement of GMOs and sets minimum international safety standards and basic biosafety best practice. We also discuss the African Model Law on Biosafety, which the African Union suggests be used as a guideline for drafting biosafety legislation in Africa. The African Model Law sets much more stringent biosafety standards than those laid down by the Biosafety Protocol. The Model Law is thus an important benchmark against which you may assess the biosafety laws of your country. We also consider a worrying intervention initiated by the Regional Economic Communities (RECs) to develop harmonised regional biosafety policies and laws that do not meet with the minimum requirements of the Biosafety Protocol. The implementation of these harmonised regional policies will impact enormously on the decision-making processes in your own countries and your ability to interact with such processes. We discuss, as an important case study, the South African legal and policy framework for GMOs. This framework often serves as a reference point for other African countries in the development of their own biosafety policies and laws. In a second case study, we then examine how the South African labelling policy has evolved over the past decade in response to international developments in the field of biosafety and pressure from both the biotech industry and civil society groups.

The third section, *Identify your allies*, encourages you to identify institutions and persons from various sectors that could assist you in developing informed positions and building pressure groups.

In the fourth section, *Interact with the process*, we offer practical guidelines on how companies and research institutions will apply for GMO permits, what that process may entail with regard to decision making, and how best you can engage with these processes. To assist you, we use several examples from the South African process and ACB's engagement. This section is expressly not about enabling African civil society to engage in processes to facilitate the entry of GMOs into African food systems and agriculture. The intention is to share best practise with the objective of providing alternative and independent information to that of the producers of GMOs. Another key objective is to encourage the use of public participation and consultation opportunities with the aim of ensuring good governance and sound and informed decision making.

In the fifth and final section, *Keep the pressure on*, we share some of our experience gained regarding engagement with the media and mobilisation.

We sincerely hope that this handbook will make a contribution towards sharing of best practice in the pursuit of challenging GMO permit applications, the protection of the rights of consumers, farmers and indeed all citizens, and the rigorous regulation of an industry whose power threatens these rights.

LIST OF OUTCOMES FOR THIS HANDBOOK

SECTION	OUTCOMES
1 Know the field and articulate your position	Develop a critique of the introduction of GMOs into your country. Describe the status quo of GMOs globally, in Africa and the key threats they pose.
1.1 Global food security	Describe the global context in which GMOs are situated, articulate what you believe are the underlying causes of global food insecurity, and suggest at least one possible solution.
1.2 Two paths to food security – The Green Revolution and Agroecology	Critique and understand the two dominant solutions to food security.
1.3 Introduction to genetically modified organisms	Develop a picture of what crops are available globally and gather information on GM projects and crops that are being developed in your own country.
1.4 Drivers of GMOs into Africa	Identify the key threats on the horizon and their status in your country.
1.5 Potential risks of GMOs	Develop a checklist of potential risks when assessing biosafety data and know where to find further resources.
2 Familiarise yourself with the regulatory issues	Be aware of the major legal instruments impacting on GMOs internationally, regionally and domestically. Know the status of your national framework and understand the typical shortcomings in African biosafety legislation.
2.1 The Cartagena Protocol on Biosafety to the Convention on Biological Diversity	Identify the strengths and weaknesses of this Protocol and apply it to your situation.
2.2 African Model Law on Biosafety	Be aware of the high level of biosafety recommended by the African Union and compare it with your country's biosafety regime.
2.3 Heads up on the Regional Economic Communities' proposed role in biosafety	Understand why biosafety harmonisation through the Regional Economic Communities is a threat to biosafety regulation in your country.
2.4 South Africa's biosafety policy environment	Be aware of the dangers of the South African regime and use these to alert you to similar shortcomings in your own national framework.
2.5 A decade of lobbying has resulted in a labelling regime	Understand the major issues to be dealt with in labelling regimes to inform your position in your own country.
3 Identify your allies	Identify and agree on what groups and individuals can assist and support you, and in what manner.
4 Interact with the process	Conceptualise and plan how you will engage with government, GM producers and civil society when commenting on GM permits under consideration.
5 Keep the pressure on	Plan effective interaction with the media.

1

**KNOW THE FIELD AND
ARTICULATE YOUR
POSITION**

Outcomes



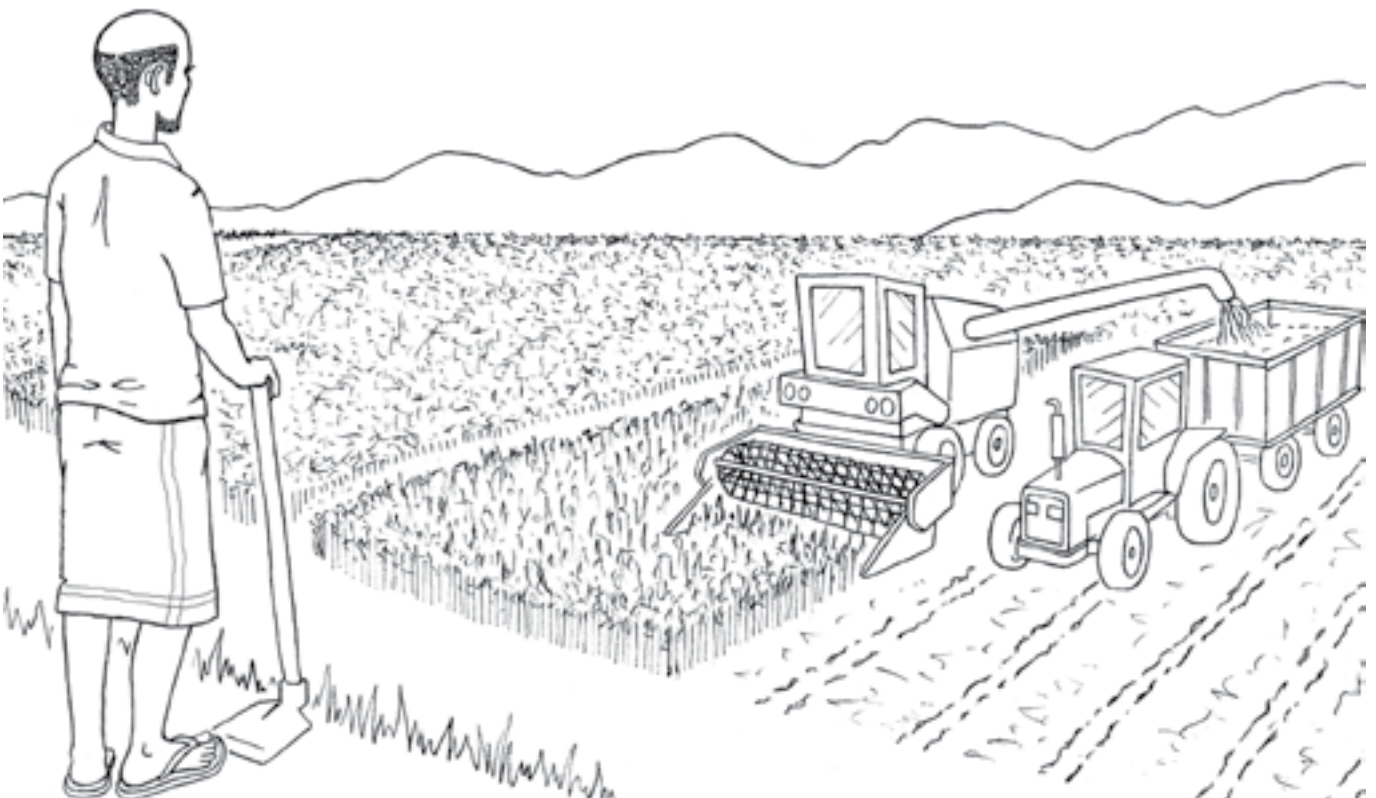
1. *Develop a critique of the introduction of GMOs into your country.*
2. *Describe the status quo of GMOs globally, in Africa and the key threats they pose.*

It is beyond the scope of this handbook to delve deeply into the highly complex geopolitical context in which GMOs are embedded. However, we do make an attempt to provide some broad guidelines and encourage you to explore some of the key issues further on your own. We invite you to use the exercises and engage critically in the debate to develop your own understanding and be able to articulate this understanding concisely and convincingly to a third party.

In this section, we cover five topics:

- ◆ Global food security
- ◆ Two paths to food security: Green Revolution and Agroecology
- ◆ Introduction to genetically modified organisms
- ◆ Drivers of GMOs into Africa
- ◆ Potential risks of GMOs

Each topic is briefly introduced, with further suggested readings on the CD provided. Use these to prepare presentations or handouts for your workshop. Exercises are given at the end of most topics.



1.1

GLOBAL FOOD SECURITY



Outcomes

1. Describe the global context in which GMOs are situated.
2. Articulate what you believe are the underlying causes of global food insecurity.
3. Suggest at least one possible solution.

Use the following information to prepare a flipchart, PowerPoint slide presentation and/or hand-out that will stimulate a discussion on global food security issues. This is a quick and useful warm up exercise to set the tone of a workshop.



Global food security is a major concern for every government and every citizen in the world. The Food and Agriculture Organisation estimates that 1.02 billion people are undernourished worldwide, and that in 2006, in sub-Saharan Africa and South Asia, respectively, 41 and 44 percent of children under seven suffered from stunted growth – a telling indicator of chronic under-nutrition.¹



Millennium
Development
Goals: [http://
www.un.org/
millenniumgoals/](http://www.un.org/millenniumgoals/)

In 2000, 189 world leaders came together at the United Nations and endorsed the United Nations Millennium Declaration. This Declaration is regarded as a “road map” to a more equitable world by setting development goals to be achieved by 2015. The first Development Goal is to eradicate extreme poverty and hunger, by

- (1) reducing, by half, the proportion of people whose income is less than \$1 a day, and
- (2) reducing, by half, the proportion of people who suffer from hunger.²

Eleven years later, we have witnessed two major global food crises and food price hikes that have resulted in widespread protests around the world.

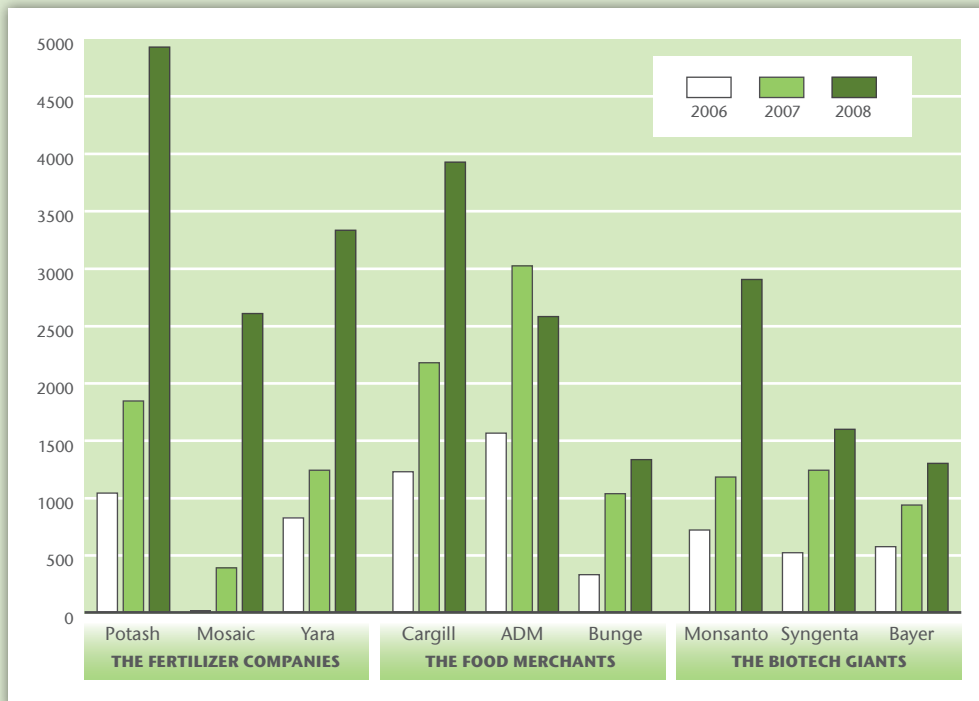
For example:

- ◆ In 2008, prices for
 - ◆ wheat rose by 70%,
 - ◆ rice by 75%, and
 - ◆ maize by 80%.
- ◆ From 2005–2007, dairy products rose by 90%.

- ◆ Food riots took place in about 40 countries around the world.
- ◆ The UN World Food Programme estimated that 100 million more people suffered from hunger.³

Ironically, during the same period of time, various sectors of agribusiness made some of their best profits to date. Figure 1.1 provides a stark illustration of the inequitable and unjust state of our global food production system.

Figure 1.1: Top agribusiness corporations profiting from the food crisis (annual profits, in US\$ millions)



Source: GRAIN, *Corporations are still making a killing from hunger*⁴



“Corporations are still making a killing from hunger”: <http://www.grain.org/seedling/?id=592>

Exercise: *Why are people hungry?*

Time: 15 minutes.

Resources: Flipchart or PowerPoint presentation slide on hunger statistics.

Optional: Prepare a handout from the readings given on the Reading CD.

Exercise:

After the presentation, participants should have a 5-minute discussion with the person or two sitting next to them on the question ‘*Why are over 1 billion human beings hungry today?*’

Then take 10 minutes for feedback from these “buzz groups”.



1.2

TWO PATHS TO FOOD SECURITY: THE GREEN REVOLUTION AND AGROECOLOGY



Outcome

Critique and understand the two dominant solutions to food security.

An introduction to the two dominant agricultural systems that are currently in operation is given below, and further readings can be found on the Reading CD. The suggested exercises encourage participants to argue effectively for their preferred system – industrial agriculture or agroecology – and to make suggestions that will support the implementation of that system. These suggestions could include policy at international, regional or domestic level; certain types of capacity and support for farmers or NGOs; research; infrastructure; etc.

INTRODUCTION TO PARALLEL AGRICULTURAL SYSTEMS

It is estimated that human beings have been farming for at least 10 000 years. In just the last 60 years we have witnessed a radical change in agricultural production with the introduction of agrochemicals, hybrid seeds that respond to these agrochemicals and the mechanisation of labour. This monocrop agricultural system is designed for increased production, export and global trade, as opposed to local food security.

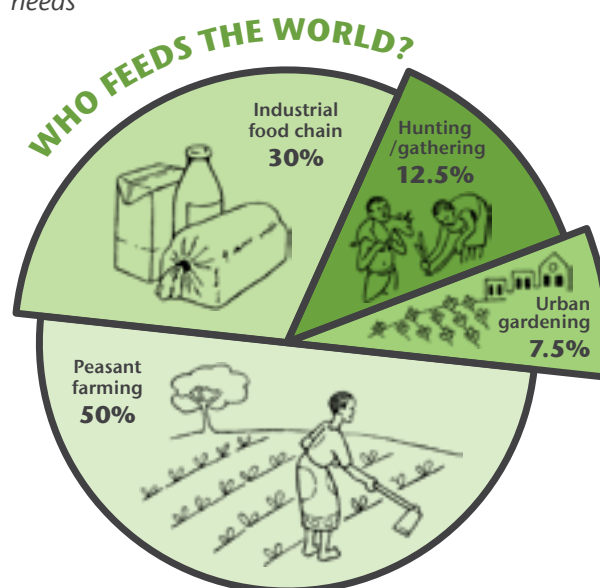
This shift in agricultural practice was brought about by the “Green Revolution”, which is discussed in more detail below. Despite its short history, this form of agriculture is known as “conventional agriculture” and is perceived to be the principal provider of the world populations’ food needs. The age old systems used by peasant farmers are now known as “alternative” agriculture. This is a perception that suits agribusiness well in their quest to encourage governments and farmers to “modernise”.

However, it is not conventional agriculture that provides food for the majority of households around the world. Ecological forms of agriculture, practiced by small-scale farmers who provide food security directly for their families and local communities, still contribute the largest proportion (Figure 1.2). While the industrial food chain provides 30 percent of our food needs, the bulk is produced by peasant farmers and a small percentage by urban gardeners and hunter-gatherers.⁵

Typically, peasant farmers use seed that has been passed down from generation to generation and shared amongst community members. Seed has been skilfully bred and selected for local environments and to suit a variety of needs, such as climate change adaptation, taste, good storage, nutritional value, ritual and cultural needs. Peasant farms are also often repositories of a wide variety of crops that provide for food, medicine, soil regeneration and livestock feed. Peasant-bred livestock is now also being recognised as a highly valuable agricultural resource.

There is, generally, precious little support for farmers in these systems in terms of policy, government extension, research, breeding and infrastructure. However, several recent reports released by various agencies of the United Nations support agroecological methods and are suggesting policy shifts towards these agricultural systems to ensure future global food security.

Figure 1.2: Contribution by different sectors to world food needs



Source: ETC Group, "Who Will Feed Us?"

THE GREEN REVOLUTION

The roots of the first Green Revolution can be traced to a 1943 agricultural development project in Mexico, aimed at increasing the yield of beans and corn to address widespread poverty and hunger that was threatening the political stability of the country. The project was implemented by the government of Mexico, but was initiated and funded by the Rockefeller Foundation under the leadership of its fourth president, Raymond B. Fosdick. Key project interventions focused on training local plant breeders and scientists on new techniques in plant breeding and farming systems, where the use of inorganic fertilizers and modern seed varieties was central.

Rockefeller's agricultural project in Mexico was so successful that it was replicated in other parts of Latin America in the late 1940s, and in India and Southeast Asia in the 1950s, where the model brought phenomenal successes in increasing crop production in wheat, corn and rice. This prompted the then Director of the United States Agency for International Development (USAID) to coin the term "Green Revolution" as having been an important political intervention led by the United States to arrest the spread of Communist insurgency across Latin America and Asia after World War II.

The Rockefeller Foundation considers the Green Revolution as one of the most prominent achievements in its long history of philanthropy. It sums up its unprecedented feat as "a combination of venturesome philanthropy, astute agricultural research, aggressive recruitment and training of scientists and farmers in the developing world, and determined government agricultural and water policy". But largely a "product of philanthropy, in a carefully negotiated partnership with government". This is basically the same institutional formula that the Rockefeller Foundation now intends to follow in Africa in promoting the New Green Revolution.

The hallmarks of the Green Revolution, now also known as industrial agriculture, are:

- ◆ monoculture crops, where large tracts of land are planted to a single crop
- ◆ package of hybrid seeds which respond to chemical fertilizers and are protected by chemical herbicides and pesticides, produced and controlled by agribusiness
- ◆ export oriented
- ◆ mechanised
- ◆ capital intensive

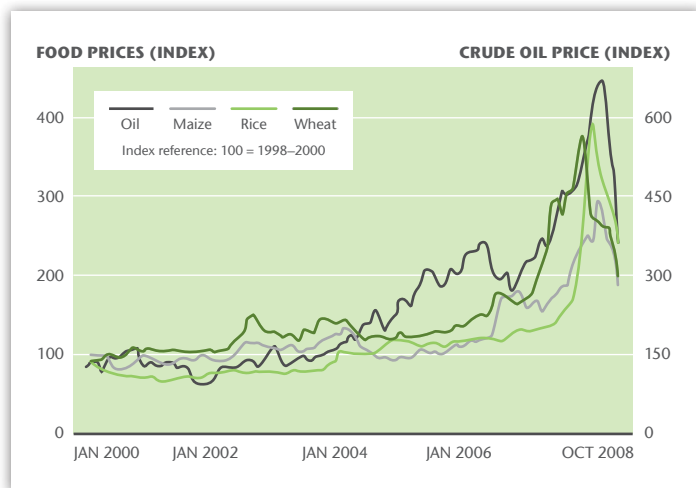


http://webcache.googleusercontent.com/search?q=cache:NwjNV0uZhHIJ:www.etcgroup.org/upload/publication/pdf_file/ETC_Who_Will_Feed_Us.pdf+ETC+group+who+will+feed+us&cd=2&hl=en&ct=clnk&gl=za&source=www.google.co.za



Excerpt from "Unmasking the new Green Revolution in Africa: Motives, players and dynamics", available on the Reading CD [file 1.2.1].

Figure 1.3: Food and oil prices index



Source: IMF 2008, FAO 2008, cited in Nelleman, C. et al. 2009⁷

This system of agriculture is wholly dependent on the use of fossil fuels. Oil is used, for instance, in the production of agricultural chemicals (petrochemicals), to transport commodities around the globe and to power tractors, combine harvesters, etc. Thus, industrial agriculture is inherently tied to the fate of crude oil — a rapidly disappearing, non-renewable resource (Figure 1.3). Industrial agriculture has been identified as the primary culprit contributing to global climate change. Vast tracts of land are cleared of ancient biomass for monocultures and, moreover, industrial agriculture emits up to 30% of the planet's greenhouse gas emissions.⁶

Genetically modified crops are the next step in the Green Revolution project. A major difference is that, with GMOs, the science involved in producing them is much more complex and there is little international scientific agreement regarding the safety of

GMOs to human and animal health and the environment. In many ways, the mainstream biosafety debates have placed issues of food security in the scientific arena, under the control of scientific experts, leaving the public and farmers confused and outside of the decision-making process.

The difficulty of accessing this science, for the purposes of carrying out independent safety testing and assessment, compounds the problem. Those involved in the development of GMOs — industry and research scientists alike — routinely block the public's access to information, claiming that the information is confidential business information (CBI). Tighter intellectual property rights (IPRs), in the form of patents on genes and other parts of the natural world used to produce GMOs, is another key difference between GMOs and hybrids used in conventional agriculture. Indeed, the lucrative patenting and cross-licensing of GM technology is the driving force behind the development of these seeds and related agrochemicals as well as the concentration and consolidation in the food industry.

AGROECOLOGY

Agroecology encompasses a host of agricultural systems that work with nature in a self-sustaining manner. These systems include practices such as traditional agriculture, organics, biodynamics and permaculture. Unlike industrial agriculture, the focus is generally less on yield and more on the health of the entire agro-ecosystem and the social systems in which these agricultural practices are embedded. This would include human, financial and environmental systems, and the inter-relationships between them. Agroecology is not simply a food production system, but is based on a philosophy of social and environmental sustainability.

It is generally accepted that agricultural biodiversity is critical for food security throughout the world. At the genetic, species, and farming systems levels, biodiversity provides valuable ecosystem services and functions for agricultural production. Strategies that build upon valuable local experience and knowledge in traditional farming practices are not at the centre of national policies as discussed above. Recent scientific findings concerning agroecology and ecosystem health are not being adequately acknowledged. There is an urgent need to adopt an agro-ecosystems approach that focuses beyond genetic resource conservation, to implement other biodiversity-enhancing methods on farms, such as integrated ecological pest and soil management. However, these cannot co-exist with agricultural strategies that promote monoculture industrial farming models and uniform technology packages as those being offered by the gene and green revolutions. In addition, it is vital for those who have knowledge of the values and uses of such

biodiversity — particularly indigenous peoples and small farmers — to have these knowledge systems protected.

In the past, agroecology was dismissed as impractical and unable to produce enough food to meet the needs of the world's burgeoning population. However, several recently released research studies by various United Nations agencies contradict that assumption. In his report to the UN Human Rights Council, Special Rapporteur on the Right to Food, Olivier de Schutter, strongly supports agroecological practises, which he argues can simultaneously:

- ◆ increase farm productivity and food security,
- ◆ improve incomes and rural livelihoods, and
- ◆ reverse the trend towards species loss and genetic erosion.

He explains that the core principles of agroecology include:

- ◆ recycling nutrients and energy on the farm, rather than introducing external inputs;
- ◆ integrating crops and livestock;
- ◆ diversifying species and genetic resources in agro-ecosystems over time and space; and
- ◆ focusing on interactions and productivity across the agricultural system, rather than on individual species.

Agroecology is highly knowledge-intensive, based on techniques that are not delivered top-down, but developed on the basis of farmers' knowledge and experimentation.⁸ Sustainable agro-ecosystems:

- ◆ maintain their natural resource base;
- ◆ rely on minimum artificial inputs from outside the farm system;
- ◆ manage pests and diseases through internal regulating mechanisms; and
- ◆ recover from the disturbances caused by cultivation and harvest.⁹



Further reading on the CD: "Report submitted by the Special Rapporteur on the right to food, Olivier De Schutter," to the United Nations Human Rights Council [file 1.2.2]. Also available at http://www.srfood.org/images/stories/pdf/officialreports/20110308_a-hrc-16-49_agroecology_en.pdf

Exercise: Agriculture and food security

Time: 15 minutes.

Resources: Flipchart paper and pens.

Recommended: Ask participants to research some of this information before the workshop.

Exercise:

Brainstorm with the plenary group –

- ◆ Describe the agricultural sectors in your country. You can include information such as the contribution to the GDP, major imports and exports, the number of small-scale and large-scale farmers, and the role of agribusiness.
- ◆ Include your own opinion of the major food security challenges and how your government is dealing with them.
- ◆ Describe your own solutions.





Exercise: *Paths to food security*

Time: 30–40 minutes.

Resources: Flipchart paper and pens. The excerpts above can be used as handouts.

Exercise:

1. Split into groups of a maximum of 8 people. Ask the groups to discuss the following, for 15 minutes:
 - ◆ What are the characteristics of the Green Revolution/industrial agriculture?
 - ◆ What are the characteristics of agroecological methods of farming?
 - ◆ What has each defined as the underlying problems for food production and how do they aim to address them?
 - ◆ What are the benefits and problems with each?
 - ◆ Develop an argument for either one or the other approach and include an appeal for particular types of support needed to ensure your model can flourish.
2. Ask each group to report back just the argument that they developed and their appeal for support. Allow a maximum of 2 minutes per group.
3. Allow 5 minutes for comments after everyone has reported back.



Exercise: *IAASTD principles*

Time: 45–60 minutes (15–20 minutes for reading; 30–40 minutes for discussion).

Resources: Handout — Page 8 of Pesticide Action Network's (PAN's) summary of the findings from the UN-led International Assessment of Agricultural Knowledge, Science and Technology for Development (IAASTD).

Exercise:

Use the handout above as a basis for the following discussion, either in groups or in plenary –

- ◆ Are you in agreement with these principles?
- ◆ Who is implementing them in your country and how? (This could be government programmes, NGOs, farmer movements, school feeding programmes, etc.)
- ◆ Can they be allies in your work?



Handout available on the Reading CD: PAN's "Biotechnology and Sustainable Development" [file 1.2.3]. Also available at http://www.biosafety-info.net/file_dir/17633109484cbd658912c6e.pdf

Exercise: “A Thousand Suns”

Time: 60–90 minutes (30 minutes to watch a film; 30–60 minutes for discussion). This could be an evening session.

Resources: “A Thousand Suns”. This excellent film looks at the introduction of the Green Revolution for Africa and the impact this will have. You might see a few familiar faces on screen!

“Shot in Ethiopia, New York and Kenya, [A Thousand Suns] explores the modern world’s untenable sense of separation from and superiority over nature and how the interconnected worldview of the Gamo people is fundamental in achieving long-term sustainability, both in the region and beyond.”

—The Global Oneness Project

Exercise:

1. Watch the film “A Thousand Suns”.
2. Facilitate a plenary discussion on the following:
 - ◆ What happened in the film?
 - ◆ Do you have similar experiences in your countries?
 - ◆ What are the social/cultural, economic and political impacts of these experiences?

Alternatively, if there is time for deeper analysis, participants can break into 4 groups for 30 minutes to answer the following questions:

1. *Social/cultural group*
 - a) What were the social and cultural norms and beliefs that allowed the changes you saw in the film to take place?
 - b) What are the social and cultural impacts of the changes that took place?
 2. *Economic group*
 - a) What economic reasons allowed the changes that you saw in the film to take place?
 - b) What are the economic impacts of the changes that took place?
 3. *Political group*
 - a) What political reasons allowed the changes you saw in the film to take place?
 - b) What are the political impacts of the changes that took place?
 4. *Environmental group*
 - a) What were the environmental issues that allowed the changes that you saw in the film to take place?
 - b) What are the environmental impacts of the changes that took place?
3. Allow each group to present their answers to question (a). Have a short discussion in plenary about the picture that has emerged about the underlying reasons that allowed the Green Revolution to take root.
 4. Then ask each group to present their answer to question (b). Have a short discussion about the impacts of these changes.
 5. Discuss any new insights that may have emerged.



The film can be watched online or downloaded for free at <http://www.globalonenessproject.org/videos/athousandsuns>

1.3

INTRODUCTION TO GENETICALLY MODIFIED ORGANISMS



Outcome

Develop a picture of what crops are available globally and gather information on GM projects and crops that are being developed in your own country.

This section provides an overview of the global status of GM crops and an update on how they are being introduced onto the African continent. We invite workshop participants to share their knowledge of the status of GM projects and interventions in their own countries, and any projects that they are aware of taking place elsewhere on the continent. It will be useful if participants can complete the country profile, provided in Annexure 2, before coming to the workshop. We also highlight the potential risks and direct you to further resources that may assist with the scientific assessment of GMOs.

INTRODUCTION

Genetically modified crops were first introduced in the United States in 1996. Initially, the six multinational companies nicknamed the “Gene Giants” (BASF, Monsanto, DuPont, Syngenta, Dow and Bayer) heralded a whole new scientific era for agriculture and promised an array of fantastic crops. Not only would they yield more, withstand drought and saline conditions and be pest and disease resistant, but they would also be more nutritious and tasty. Fifteen years later, however, few of these promises have been fulfilled. Only two traits have made it to large-scale commercialisation, namely crops engineered for pest resistance (Bt) and herbicide tolerance. The primary crops that have been engineered are maize, soya, cotton and canola.

In 2010, 148 million hectares of GM crops were cultivated worldwide, with 115.1 million of those hectares being planted in just 3 countries — the United States, Argentina and Brazil. The most widely adopted trait remains herbicide tolerance, making up 61% of GM crops in 2010.¹⁰ The most widely grown GM crop in the world is herbicide tolerant soybean, which is traded primarily as feed for the livestock industry. Approximately 93% of soya production in the USA is GM, 98.9% in Argentina and 70.7% in Brazil. These three countries produced about 80% of the world’s soya in 2009.¹¹ The introduction of herbicide tolerant soya has created a sharp increase in the use of highly toxic herbicides — in the USA, the use of herbicides has increased by 382.6 million pounds over the past 13 years, with herbicide tolerant soya beans accounting for 92% of that increase.¹²

Most of the GM crops being developed contain “stacked traits”, meaning that they contain multiple Bt and herbicide tolerant genes. The increased complexity of these crops and the increased

number of gene insertions needed to create them present major biosafety risks, concerns and challenges. In 2010, 32.2 million hectares of stacked trait crops were grown globally, representing 22% of all GM crops grown in that year.¹³

Despite agribusiness public relations investment to spread the misconception that GM crops are the norm in global agriculture, only 2.7% of global agricultural land is planted to GM crops, with the majority being grown in the United States, Brazil and Argentina. Together, these three countries account for 79.6% of the GM crops grown globally in 2009.

In 2010, the global value of the biotech seed market was US\$11.2 billion.¹⁴ The top ten seed companies account for 67% of the global proprietary seed market, and the world's largest seed company, Monsanto, accounts for 23% of the global commercial seed market. The top three companies — Monsanto, DuPont and Syngenta — together account for almost half of the world-wide proprietary seed market.¹⁵

TABLE 1.1: GLOBAL AREA OF BIOTECH CROPS IN 2010: BY COUNTRY (MILLION HECTARES)

RANK	COUNTRY	AREA	BIOTECH CROPS
1	USA*	66.8	Maize, soybean, cotton, canola, sugarbeet, alfalfa, papaya, squash
2	Brazil*	25.4	Soybean, maize, cotton
3	Argentina*	22.9	Soybean, maize, cotton
4	India*	9.4	Cotton
5	Canada*	8.8	Canola, maize, soybean, sugarbeet
6	China*	3.5	Cotton, papaya, poplar, tomato, sweet pepper
7	Paraguay*	2.6	Soybean
8	Pakistan*	2.4	Cotton
9	South Africa*	2.2	Maize, soybean, cotton
10	Uruguay*	1.1	Soybean, maize
11	Bolivia*	0.9	Soybean
12	Australia*	0.7	Cotton, canola
13	Philippines*	0.5	Maize
14	Myanmar*	0.3	Cotton
15	Burkina Faso*	0.3	Cotton
16	Spain*	0.1	Maize
17	Mexico*	0.1	Cotton, soybean
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, potato
23	Poland	< 0.1	Maize
24	Egypt	< 0.1	Maize
25	Slovakia	< 0.1	Maize
26	Costa Rica	< 0.1	Cotton, soybean
27	Romania	< 0.1	Maize
28	Sweden	< 0.1	Potato
29	Germany	< 0.1	Potato
TOTAL		148.0	

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

Source: Clive James, 2010.



<http://www.isaaa.org/resources/publications/briefs/42/executivesummary/default.asp>

The next big project in genetic engineering is to bring “climate ready” crops to the market. This is an attempt to capitalise on the current climate crisis. By all accounts, the technology to create drought tolerant crops is at least 10 years away from commercialisation. It is estimated that engineering drought tolerance could involve up to 60 genes, all interacting in subtle and complex ways.¹⁶

The “Gene Giants” (BASF, Monsanto, DuPont, Syngenta, Dow and Bayer) are all competing to bring such crops to the market. International NGO, The ETC Group, has reported that between June 2008 and June 2010, 1,663 patent documents had been lodged worldwide related to crops with traits such as drought, heat, flood and salt tolerance.¹⁷ Just three companies, DuPont, BASF and Monsanto, own 66% of these patents. Only 9% of patents are held in the public domain. The market value of climate ready maize alone is estimated to be US\$ 2.7 billion.¹⁸ Apart from its use as food, feed and in agricultural processing, maize is also a major agrofuel feedstock — in 2009, about one third of the United States corn crop went into ethanol production for fuel.¹⁹ Monsanto is currently waiting for commercial approval of their first drought tolerant crop — MON 8746 — in the United States. The same variety is currently being field trialled in South Africa under the Water Efficient Maize for Africa (WEMA) project.

The “Gene Giants” have all used a similar strategy to gain acceptance for these crops and bring them to developing countries. They have developed private/public partnership projects in collaboration with philanthropic organisations. They have also promised small-scale farmers access to their new technology “royalty free”. Africa is a major recipient of these projects, of which WEMA is an example. Further details are elaborated in the following section.

1.4

DRIVERS OF GMOs INTO AFRICA

Outcome

Identify the key threats on the horizon, and their status in your country.



OVERVIEW

South Africa had no qualms about planting the first GMO crops on the African continent in 1997, despite the lack of any national legislation to regulate them (the South African GMO Act only came into force in 1999). While the South African government brazenly released GM crops into the environment without the consent of the South African public, critical and contentious international negotiations were taking place in the international arena to develop the Cartagena Protocol on Biosafety. Simultaneously, African leaders were developing the African Model Law on Biosafety in consultation with civil society on the continent, being keenly aware of the multiple dangers that this new technology could pose. The Model Law was adopted by the African Union in 2003, in the same period that the Cartagena Protocol on Biosafety came into force.

African leaders played a key role in shaping the Cartagena Protocol, recognising at the outset the dangers that GM seed will pose to African agricultural systems, biodiversity and socio-economic wellbeing. Over 60% of African countries have ratified the Biosafety Protocol, illustrating Africa's strong will to ensure biosafety in their countries. However, the vast majority of these countries have yet to implement their biosafety systems, many of which are still in the process of being developed. Unfortunately, the lack of capacity to develop legal frameworks on biosafety has been an advantage for the developers of GMOs. The US government, acting especially through USAID and the biotech industry, have financed and assisted in developing biosafety laws and policies — and have influenced the crafting of extremely weak biosafety laws.

However, over the years, African leaders have demonstrated their resistance to the imposition of these crops by banning and restricting GMOs, despite unrelenting political pressure from the powerful producers of GMOs:

- ◆ Algeria introduced a ban on the import, distribution, commercialisation and use of GM plant material in December 2000.
- ◆ Angola introduced a ban on imports of un-milled GM food aid in April 2004.
- ◆ Benin took measures to prevent imports of GM food aid, with a moratorium on import of GMOs until national legislation came into force.
- ◆ Lesotho permitted the distribution of non-milled GM food aid, with a public warning that the grain should be consumed and not used for cultivation.
- ◆ Malawi banned the importing of un-milled GM crops in 2002.



The final drafts of 39 African biosafety frameworks can be accessed at <http://www.unep.org/biosafety/National%20Biosafety%20frameworks.aspx>

- ◆ Mozambique’s government declared that it would only accept GM food aid provided that maize was milled prior to distribution.
- ◆ Namibia’s government rejected GM maize in 2002 and received wheat for food aid instead.
- ◆ Nigeria’s government was only prepared to accept GM food aid provided maize was milled prior to distribution.
- ◆ Sudan banned the import of GM food aid during May 2003 (but issued a series of temporary waivers under pressure by the US).
- ◆ Swaziland permitted the distribution of non-milled GM food aid, with a public warning that the grain should be consumed and not used for cultivation.
- ◆ Zambia refused to accept GM grain donated as food aid in 2002.
- ◆ Zimbabwe’s government declared that it would only accept GM food aid provided that the maize was milled prior to distribution.²⁰

TABLE 1.2: GMOS APPROVED FOR CONDITIONAL GENERAL RELEASE IN SA SINCE 1997

EVENT	CROP	TRAIT	COMPANY	YEAR APPROVED
Mon89034	Maize	Insect Resistant	Monsanto	2010
Mon89034xNK603	Maize	Insect Resistant Herbicide Tolerant	Monsanto	2010
GA21	Maize	Herbicide Tolerant	Syngenta	2010
BT11xGA21	Maize	Insect Resistant Herbicide Tolerant	Syngenta	2010
Bollgard II xRR flex (Mon15985 x Mon 88913)	Cotton	Insect Resistant Herbicide Tolerant	Monsanto	2007
Mon 88913 (RR flex)	Cotton	Herbicide Tolerant	Monsanto	2007
Mon 810 x NK603	Maize	Insect Resistant Herbicide Tolerant	Monsanto	2007
Bollgard RR	Cotton	Insect Resistant Herbicide Tolerant	Monsanto	2005
Bollgard II, line 15985	Cotton	Insect Resistant	Monsanto	2003
Bt 11	Maize	Insect Resistant	Syngenta	2003
NK603	Maize	Herbicide Tolerant	Monsanto	2002
GTS40-3-2	Soybean	Herbicide Tolerant	Monsanto	2001
RR lines 1445 & 1698	Cotton	Herbicide Tolerant	Monsanto	2000
Line 531/Bollgard	Cotton	Insect Resistant	Monsanto	1997
Mon 810/Yieldgard	Maize	Insect Resistant	Monsanto	1997

Use of the event: Importation/exportation, commercial planting, food and/or feed

Source: Genetically Modified Organisms Act, 1997. Annual Report 2008/09 and National Department of Agriculture Permits Issued 2010 www.nda.agric.za. Accessed 26 August 2011

In 2008, Burkina Faso became the only other African country besides South Africa to commercially release a genetically modified crop — Bt cotton. Burkina Faso is the only West African country with a National Biosafety Framework (NBF) in place. The International Service for the Acquisition of Agri-biotech Applications (ISAAA) estimates that 115,000 ha of Bt cotton was planted in Burkina Faso in 2009.

South Africa's GMO Act came into force in 1999. There was very little public awareness or input regarding the Act. South Africans have been consuming these foods (maize being a staple for the population) unaware and unlabelled since that time. South Africa is the 8th largest producer of GM crops in the world, and since 2007 has been growing GM white and yellow maize, soya and cotton for commercial planting. In 2009/10, just under two thirds of the total white maize crop was genetically modified, mostly for pest resistance. In 2008, about 88% of soya seed sales were GM seed, and in 2008/09, approximately 96% of cotton seed sales were GM varieties.²¹

In 2010, an application for the commercial release of genetically modified potato — engineered for resistance to the potato tuber moth, a pest that can cause damage during storage — was denied by the South African GMO authorities. The crop was developed under the auspices of

the Agricultural Research Council (ARC) and funded by USAID. The application was rejected on the basis that the science presented by the ARC was of poor biosafety quality, that the crop posed unacceptable biosafety risks and that it was apparent that the crop would not be beneficial for either small or large-scale farmers. This decision is currently under appeal. We deal with this case further on, as it represents one of the victories of resistance and was opposed using a variety of strategies.

In 2010, African countries began accepting shipments of mixed GM maize varieties for commodity use from South Africa for the first time. This trend looks set to continue and shows Africa's readiness for GMOs in their agricultural systems. Despite investigation, it is not clear what regulatory procedures were followed in the countries of export. This resulted in scandal in Kenya in 2010.²² Table 1.3 shows the commodity exports from South Africa in 2010 and 2011 to other African countries.

TABLE 1.3: SOUTH AFRICAN COMMODITY EXPORTS TO AFRICAN COUNTRIES IN 2010 AND 2011, IN METRIC TONNES (MT)

	2010	2011
Kenya	240 000	
Mozambique	247 896	25 000
Swaziland	39 000	26 100
Somalia	20 635	14 000
Egypt		70
Mauritius	16 000	

Source: compiled from National Department of Agriculture, Permits Issued 2010 and 2011. www.nda.agric.za, accessed 26 August 2011

LECTURE RESOURCE

As mentioned earlier, Africa has been very slow to adopt GMOs, especially for commercial planting. However, as legal frameworks are slowly being pushed through parliamentary processes and nearing implementation, Africa will soon be open for GMO business. A number of projects have been funded and supported to institute “Green Revolution”-style agriculture and introduce GMOs onto the continent. The following are short introductions to:

- ◆ the Alliance for the Green Revolution in Africa (AGRA);
- ◆ the Water Efficient Maize for Africa (WEMA) project; and
- ◆ an initiative to introduce soya as a new commodity crop in Africa.



This section is available as a PowerPoint presentation on the Reading CD [file 1.4.1].

These are excerpts that can be used as handouts (the complete readings are available on the Reading CD). They are only three examples of a myriad of current projects in the “Green Revolution” push; we suggest that your participants share any information they may have regarding any other projects that are promoting GMOs in their countries.



*Excerpt from
ACB's "New Green
Revolution for
Africa. Trojan
horse for GMOs?",
available on the
Reading CD
[file 1.4.2].*

The New Green Revolution for Africa

The term “Green Revolution” was coined in 1968 by then Director of the United States Agency for International Development (USAID) to describe the so called ‘success’ in India and Southeast Asia of an agricultural model that increased crop production in wheat, maize and rice. The essential features of that model comprised a technology package involving the use of external inputs such as inorganic fertilizers, herbicides, pesticides, laboratory developed hybrid seeds, mechanisation and extensive irrigation projects. The Rockefeller Foundation played a crucial role in promoting this technology package, which also formed the basis of agriculture development aid and assistance at that time. Despite the devastating ecological, social and economic consequences that it brought in its wake, the Asian Green Revolution is widely celebrated by its promoters as having brought sufficient and affordable food to the world’s poor.

Africa’s new Green Revolution is the brainchild of Gordon Conway, a world-renowned agricultural ecologist and former president of the Rockefeller Foundation. There is a veritable smorgasbord of players involved in exporting and promoting various versions of Conway’s Green Revolution, including, for example, political regional actors such as the New Partnership for Africa’s Development (NEPAD).

The Rockefeller Foundation prescribes a fundamental transformation of Africa’s agricultural economy, premised on a brutal departure from the use of traditional seeds and local knowledge and exchange systems. Drawing heavily on Conway, the Foundation recommends the application of modern laboratory made seeds and inorganic fertilizers as being key to Africa’s agricultural development and food security. These prescriptions are principally based on the ‘old’ Asian model of adopting high-yielding agricultural techniques. However, the Rockefeller Foundation also promotes the production of crops that are drought tolerant and resistant to pests and diseases, and which provide greater nutritional value.

The Foundation also supports the use of GM seeds, both as a means to increasing crop yields and representing a ‘greener’ revolution that is less dependent on chemical inputs. The promotion of GM seeds and crops is thus an integral part of the new Green Revolution project. The emphasis of Africa’s Green Revolution on avoiding the shortcomings wrought by the use of agricultural chemicals by the Asian Green Revolution makes the role of GM seeds a crucial ingredient in the project.

Alliance for a Green Revolution in Africa

On 12 September 2006, the Rockefeller and the Bill & Melinda Gates Foundations launched a new partnership which they named *Alliance for a Green Revolution in Africa* (AGRA). AGRA has committed an initial \$150 million to enable the transfer of a technology package featuring improved hybrid seeds, inorganic fertilizers, water

management and extension services to Africa. AGRA's goal is to develop 100 new varieties in 5 years focusing on at least 10 different staple crops, including maize, cassava, sorghum, and millet. Although AGRA does not, on the face of it, promote the use of GM technologies, 70 organisations from 12 African countries see AGRA as shifting African agriculture to a system dependent on expensive, harmful chemicals, monocultures of hybrid seeds, and ultimately GMOs. These groups argue that the Green Revolution, under the guise of solving hunger in Africa, is nothing more than a push for parasitic corporate-controlled chemical system of agriculture that will feed on Africa's rich biodiversity.

It has not gone unnoticed that AGRA falls under the direct supervision of the Global Development Program, whose senior programme officer is Dr. Robert Horsch, who worked for Monsanto for 25 years before he joined the Gates Foundation. Horsch was part of the scientific team in the company that developed Monsanto's *YieldGard*, *BollGard* and *RoundUp Ready* technologies. Horsch's task at the Gates Foundation is to apply biotechnology toward improving crop yields in regions including sub-Saharan Africa. Lutz Goedde, another senior program officer of the Global Development Program, is also a recruit from the biotech industry as he used to head Alta Genetics, the world's largest privately owned cattle genetics improvement and artificial insemination Company, worth US\$100 million.

AGRA's programmes are administered through the 'Programs for a Green Revolution in Africa' (ProGRA), which has an initial annual grant flow of around \$30 million for selected countries in East, Southern and West Africa. The officers of AGRA and ProGRA will initially be key senior staff from the Rockefeller Foundation, where they will be based in Nairobi, Kenya.

The first major initiative of ProGRA is the Program for Africa's Seed System (PASS), intended to operate in 20 African countries. PASS is embodied by five projects costing \$150 million over five years, (\$ 50 million coming from the Rockefeller Foundation's contribution and \$100 million from the Gates Foundation). PASS will focus primarily on improvement and distribution of crop varieties; training of a new generation of plant breeders; seed distribution through seed companies, public community seed systems and public extension; and provision of credit and training for small 'middle men' agro-dealers for distribution of seeds, chemicals and fertilizers (the Agro-Dealer Development Program).

Water Efficient Maize for Africa (WEMA)

Six multinational companies, BASF, Monsanto, DuPont, Syngenta, Dow and Bayer, are feverishly competing with each other to bring energy crops to the market that will withstand the vagaries of climate change conditions. Between June 2008 and June 2010, 1,663 patent documents had been lodged worldwide related to crops with traits such as drought, heat, flood and salt tolerance. Just three companies, DuPont, BASF and Monsanto, own the vast majority of the patents held on climate friendly crops. Only 9% of these patents are held in the public domain. The market value of 'climate ready' maize alone is estimated to be over US\$ 2.7 billion.

Monsanto and BASF have teamed up with the Gates and Howard G. Buffet Foundations to bring genetically modified (GM) drought resistant maize to sub-Saharan



AGRA Watch:
<http://www.seattleglobaljustice.org/agra-watch/>



Excerpt from ACB's "WEMA: Pushing GMO crops onto Africa", available on the Reading CD [file 1.4.3].

Africa. The Foundations have made available US\$47 million to a project known as *Water Efficient Maize for Africa* (WEMA). According to Monsanto, Warren Buffett's son, Howard Buffett, is also assisting with the project.

The project is being rolled out in five countries — South Africa, Uganda, Kenya, Tanzania and Mozambique. Field trials are already underway in South Africa and Uganda, with Kenya and Tanzania running 'mock trials.' The International Maize and Wheat Improvement Centre (CIMMYT) and local agricultural research institutions in the five countries will provide research capacity and access to germplasm. A key role player in the WEMA project is the African Agricultural Technology Foundation (AATF), a group funded by industry and USAID, active in lobbying in favour of GMOs and weak biosafety regulations on the continent. WEMA's proponents predict that drought tolerant crops will increase crop yields by 30%, adding two million additional tons of food during drought years, in the participating countries.

WEMA will be most beneficial for Monsanto, enabling it to bring a new trait to the market and gain a foothold in Africa for its products. The GM drought tolerant maize in question is known as MON87460, which is pending regulatory approval in the United States and Monsanto predicts it will come to market in 2012. Applications have also been made in Canada and Mexico. Applications for food, feed and processing have already been made in Australia and New Zealand, Japan, Korea and the European Union, with the Food Standards Australia/New Zealand (FSANZ) having approved it.

Key concerns about WEMA

- ◆ Africa risks following an erroneous and misguided development intervention to alleviate hunger and mitigate the effects of climate change, in the process handing over its food systems to the private sector;
- ◆ WEMA is a Trojan horse to pressurise participating governments to pass weak biosafety regulations and open the door to the proliferation of GMOs that will undermine food sovereignty;
- ◆ Engineering drought tolerance in crop plants is highly complex, and it is extremely doubtful that the one gene GM drought tolerant maize crop on offer will be effective in varying environments and weather conditions;
- ◆ There are huge biosafety risks inherent in GM drought tolerant crops — to the environment, human and animal health and to society at large;
- ◆ WEMA displaces farmer owned and led agriculture, systems that are appropriately diverse and resilient;
- ◆ WEMA diverts funding and research capacity and support away from farmer led, diverse and resilient systems.



*Excerpt from:
ACB's "The Gates
Foundation and
Cargill push soya
onto Africa",
available on the
Reading CD
[file 1.4.4].*

Soya — a new commodity for Africa

The Bill & Melinda Gates Foundation has announced a new project to develop the soya value chain in Africa in partnership with American NGO, TechnoServe and agricultural commodity trading giant Cargill. The US\$8 million project will be implemented as a four-year pilot in Mozambique and Zambia with the intention of spreading the model to other regions in the future.

The Gates Foundation continues to back agricultural strategies that open new markets for strong corporate interests while assisting in the creation of policy environments to support foreign agribusiness' interests. The programme will yoke African farmers into the soya value chain and open the door for major agribusiness players such as Cargill, while displacing African agricultural practices and traditional crops. In addition, there is a very real threat that this project could be a foot in the door for the introduction of genetically modified soya onto the Continent.

Since the green revolution of the 1960s, soya bean has become the number one forage crop on the international market. About 85% of the world's soybeans are processed into soya bean meal and oil; about 98% of that meal is further processed into animal feed, the balance is used to make soya flour and proteins. Approximately 95% of the oil is consumed as edible oil, with the rest being used for industrial products such as fatty acids, soaps and agrofuel.

The United States, Argentina and Brazil are the three major producers of soya in the world. The aggressive expansion of soya monocrops in Latin America has wreaked socio-economic and environmental disaster — in 2008, over 30 million hectares of soya was grown in Brazil and Argentina, where soya monocrops are notorious for displacing rural populations and causing mass deforestation. In April 2006, Greenpeace announced that in the 2004/2005 growing season, 1.2 million hectares of the Amazon rainforest was deforested as a consequence of soya expansion.

The four-year project will introduce soya production to 37,000 small-scale farmers in Mozambique and Zambia and aims to spread the model to other regions in the future. The project will target smallholder farmers and facilitate their access to agricultural inputs and new technology, facilitate market access, assist in infrastructure development and in developing enabling policies for investment. The cultivation of soya in Africa is negligible, with Africa contributing to less than 1% of global soya bean production.

As demand for soya feed for the growing global livestock sector increases, along with a growing interest in the crop for biofuel production, soya is becoming an attractive crop that is worthy of investment. Global prices for vegetable oil are good and this, too, is attracting investment. There have been recent major private investments in oil processing plants in Uganda and Mozambique and investors are keen to contract local farmers to supply raw materials. This model threatens to bring farmers into a high-risk global market and shift agricultural practices from using local inputs to reliance on agribusiness products.

A further threat is the introduction of genetically modified soya into Africa. South Africa is the only country on the continent that is growing genetically modified soya and has been doing so since 2001. In 2010, South Africa has begun exporting genetically modified commodities to the rest of Africa for the first time. This is as a result of the finalization of African biosafety legislation that allows for the cultivation and import of [genetically engineered (GE)] crops and commodities. In early 2010, the Mozambican government allowed for the commodity import of 35,000 MT of GM soybeans. This is the first such permit authorised by the Executive Council in South Africa.

As the major global producers of soya have almost completely adopted GM in their production, it is likely that there will be great pressure for African farmers to adopt these seeds. The acceptance by the Mozambican government of the first GE shipment of soya from South Africa shows that their door is now open for African trade in GM soya, although the road to environmental releases of crops will be a longer and more arduous process. Zambia has traditionally been one of the strongest forces against genetically modified seed on the continent, taking an extremely cautious approach in its biosafety legislation. In 2002, the Zambian government rejected the import of GM food aid for almost 3 million starving people. It was an extremely controversial decision, but after despatching a group of scientists to investigate the safety of the crop, President Levy Mwanawasa held to his convictions in the face of massive international pressure. Could this support for the introduction of soya into the country be the beginning of the erosion of that caution?



Exercise: *GMO drivers*

Time: 90 minutes.

Resources: Handouts – use the executive summaries of the ACB readings on AGRA, WEMA and the soya push in Africa (available on the readings disk); otherwise participants can read from the above excerpts in their handbooks.

Exercise:

1. Break into 3 groups – each group will deal with a different threat.
2. Ask each group to discuss their topic for at least 15 minutes and prepare a 5-minute presentation on the key threats emanating from these projects. The presentation should identify –
 - ◆ the major players,
 - ◆ the tactics used to sell the project and
 - ◆ the likely impact.
3. Allow for questions and comments in plenary after each presentation.

1.5

POTENTIAL RISKS OF GMOs

Outcome

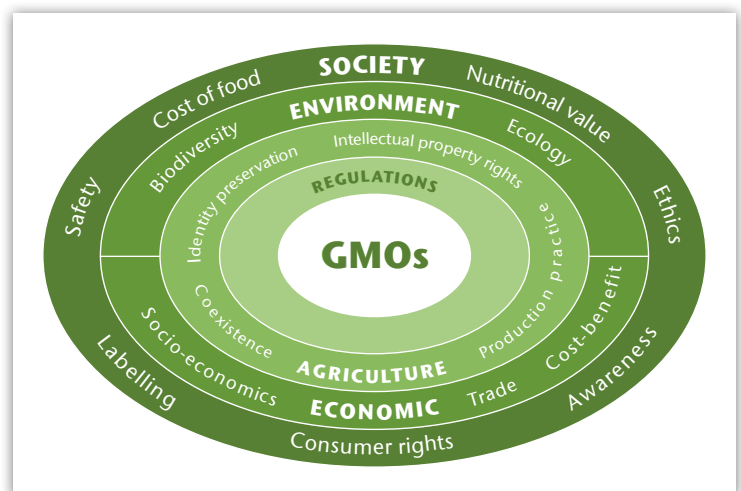
Develop a checklist of potential risks when assessing biosafety data and know where to find further resources.



The following section provides a general overview of the potential risks of GMOs that ACB has identified from its extensive experience in scrutinising applications and risk assessment data submitted by applicants seeking GMO permits. ACB has routinely requested independent scientists to assist in assessing the application and risk assessment and providing a well-researched critique.

Figure 1.4 illustrates how GMOs impact on every sphere of human life. Nevertheless, this extremely complex technology is generally assessed on a very narrow scientific basis. A typical assessment that would be deemed adequate by regulatory authorities would include data on the following:

Figure 1.4: Impact areas of GMOs



Source: Chetty, L. 2008²³

Molecular and comparative analysis

- ◆ intactness, stability and expression of the genetic insert
- ◆ compositional assessment and agronomic traits

Food, animal feed and health safety issues

- ◆ allergenicity and toxicology
- ◆ nutritional assessment

Environmental safety issues

- ◆ gene flow and biodiversity
- ◆ invasiveness, weediness, resistance
- ◆ impact on target and non-targeted organisms
- ◆ new pests and diseases

The typical findings of a GMO risk assessment are illustrated in Box 1.1.

Box 1.1

Summary of ACB's key findings as set out in "Objections to Syngenta's application for general release of GM maize event Bt11 X GA21"²⁴

As usual, we have only been furnished with information that the developers deem to be 'non-confidential', so crucial data required to make a thorough independent assessment are missing. Excluded information included details of test data specific to South African growing conditions.

The cauliflower mosaic virus 35s promoter (35S-CaMV) is present in GA21 x Bt11. There is a substantial body of evidence from both the laboratory and field studies pointing to the risks of using this particular promoter in genetic engineering.

Bt11 secretes a toxin that is lethal to some plant pests. Claims that this leads to reduced applications of pesticides neglect to mention that the Bt11 toxin will be ever present in an environment where this is planted. In China, where over 10 million small-scale farmers have grown Bt cotton, farmers are now having to use nearly as much pesticides as before its introduction to combat secondary pests that have thrived since the introduction of Bt11.

GA21 x Bt11 is tolerant to glyphosate based herbicides (traded under the name Roundup Ready). In the United States the widespread planting of Roundup Ready crops has led to the emergence of 'superweeds' that are causing havoc for farmers. In Argentina, their mass uptake has seen devastating consequences for food security and the environment.

The proposed field trials are to assess agronomic performance only. They do not address risks to biodiversity nor are they accompanied by an adequate monitoring programme in order to detect transgene escape into the environment. These are both required under both South African and international law.



www.genok.com
The BAT tool
is available at
<https://bat.genok.org/bat/>

It is most helpful to assist your government with independent analysis of safety data lodged by the applicant, but as scientific assessment of a safety dossier requires special expertise, you might need to hire a like-minded expert to do the analysis. The GenØk Centre for Biosafety is a non-commercial foundation associated with the University of Tromsø, Norway and provides the very rare service of independent, cutting edge research into Gene Ecology with a particular focus on health and environmental consequences of gene technology. They have developed an on-line guide for assessing biosafety dossiers, called the "BAT" (Biosafety Assessment Tool). This is an extremely comprehensive scientific guide to assist you in creating a checklist as you go through application dossiers as well as suggesting best practice in the field of risk assessment. This will be a useful guide for any scientist that is approached to assist in the analysis of safety dossiers. See Annexure 4 of this handbook for a breakdown of the topics covered by the BAT.

You may have noticed from the BAT checklist that socio-economic impacts are not included in the risk assessment. There is provision in the Biosafety Protocol for the voluntary assessment of socio-economic risks during the risk assessment procedure and each country may have their own specific laws on this issue, when they develop their National Biosafety Frameworks (Article 26).

Unfortunately, there are no guidelines as to how this should be executed, and it remains a grey area. The Secretariat of the Biosafety Protocol is currently hosting discussions to share experiences of the economic impacts of GMOs in different countries as well as the various policies that have been implemented around the world. Industry has fought very hard to keep the assessment of socio-economic impacts out of the approval procedures, declaring them “unscientific”. This remains an area of great contention.

The African Centre for Biosafety’s objections to sorghum and cassava experiments (in contained use), provided on the Reading CD, will be helpful for you to see an independent submission on a permit under consideration, to guide you in your endeavours. These scientific assessments were particularly important; Africa is the centre of origin of sorghum and African cassava is the centre of diversity as local farmers have adapted the crop to local conditions over many generations. Gene flow under these circumstances could be extremely damaging and serious.

Reading these objections will give you an idea of a typical objection that includes an independent scientific analysis of the safety data provided. Both applications for permits to experiment with these crops were rejected by the authorities due to the high possibility of gene flow. However, both the sorghum and cassava refusals were overturned on appeal.

OTHER USEFUL LINKS:

The Third World Network’s Biosafety Information Centre provides up-to-date information on current scientific trends and concerns. It can be accessed at: <http://www.biosafety-info.net/>

The Codex Alimentarius Commission was established by the UN Food and Agriculture Organisation (FAO) and World Health Organisation (WHO) to develop international food standards, guidelines and codes of practice. www.codexalimentarius.net/web/index_en.jsp

The Convention on Biological Diversity (CBD): www.cbd.int/

The Cartagena Protocol on Biosafety: www.cbd.int/biosafety

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement): www.wto.org/english/tratop_e/trips_e/t_agm0_e.htm



Readings on the CD: ACB objections to applications to experiment on sorghum and cassava [files 1.5.1 and 1.5.2]; ACB briefing paper on the Wambugu, Gates Foundation and DuPont GM Sorghum Project [file 1.5.3]



2

FAMILIARISE YOURSELF WITH THE REGULATORY ISSUES

Outcomes



1. *Be aware of the major legal instruments impacting on GMOs internationally, regionally and domestically.*
2. *Know the status of your national framework and understand the typical shortcomings in African biosafety legislation.*

The development of global, regional and domestic biosafety policy has been a fierce battle between those who seek protection from potential harm arising from GMOs and those who want to get GMOs onto the global market and onto farmers' fields as soon as possible. In this section, we try to provide some guidance on the key provisions and principles of the Biosafety Protocol. We also highlight the African Model Law on Biosafety, which, although voluntary, sets the high water mark for best biosafety regulation. We use the South African GMO-related policy environment as an example of a typical biosafety framework and include its limitations.

You will need to research who is responsible for biosafety regulation in your own country and begin building relationships with regulators or start building strategies for policy change where appropriate.

This section also includes regional biosafety processes that could have a profound impact on the regulation of GMOs in Africa. There is enormous pressure from the pro-biotech machinery to harmonise biosafety legislation on a regional basis on the African continent and to hand over administration of biosafety to Regional Economic Community (REC) secretariats. This initiative is being funded by USAID and agribusiness to facilitate the sale of their products through strong Intellectual Property regimes and weak biosafety regulations on the continent. This section will look at:

- ◆ The Cartagena Protocol
- ◆ The African Model Law on Biosafety
- ◆ Heads up on the Regional Economic Community's (RECs) proposed role in biosafety
- ◆ The South African GMO policy environment as an example
- ◆ An example of lobbying for a labelling regime



2.1

THE CARTAGENA PROTOCOL ON BIOSAFETY TO THE CONVENTION ON BIOLOGICAL DIVERSITY



Outcomes

Identify the strengths and weaknesses of this Protocol and apply it to your situation.



OVERVIEW

The development of an international legal regime or Protocol on genetic engineering is set out in Article 19 of the Convention on Biological Diversity (CBD). The Biosafety Protocol (BSP) aims to regulate the use, handling and cross-border transfers of genetically engineered organisms (referred to as Living Modified Organisms, or LMOs, in the Protocol). It also obliges Parties to the Protocol to develop and implement domestic biosafety regimes that may provide for stronger provisions than those set out in the BSP.



The full text of the Protocol can be accessed at www.cbd.int/biosafety and is also available on the Reading CD [file 2.1.1]

The Biosafety Protocol came into force on 11 September 2003. There are currently 160 Parties to the Protocol, with more than 60 percent of African countries having ratified it to date.²⁵ Indeed, African leaders and civil society movements played an active and influential role in shaping the text because of the risks that this technology poses for the continent. Developing countries are concerned that cross-pollination between genetically engineered (GE) crops and non-genetically engineered varieties or wild relatives could undermine food security and have a potentially devastating effect on biodiversity.

It is notable that the United States, which is the major producer and exporter of GMOs, is not a signatory to this Protocol. However, this did not impede them from meddling in the text and the development of the biosafety regimes of other countries! More on their tactics later.

The Biosafety Protocol acknowledges that the prevailing scientific uncertainty regarding the risks and impacts of the introduction of LMOs into the environment must be accounted for, and therefore the **precautionary approach** underpins the Protocol. This is significant because it gives countries leeway to reject GMOs where authorities feel that the possibility of harm is high, even in the absence of scientific proof that this harm will occur.

The Protocol establishes rules and procedures for the safe transfer, handling, and use of LMOs. While the specific focus is on **transboundary** movements of LMOs, the Protocol obliges Parties to develop National Biosafety Frameworks (NBFs) to deal with the internal regulation of LMOs.

The BSP sets out one procedure for LMOs that are to be intentionally introduced into the environment, called the **Advance Informed Agreement (AIA)** procedure, and another for LMOs that are intended to be used directly as food, feed or for processing. The aim of these procedures and requirements is to provide importing Parties with the necessary information needed for making informed decisions about whether or not to accept LMO imports, and for handling them in a safe manner. (The type of information that should be made available with GM shipments was one of the key battles in the negotiations, and this is discussed in a little more detail below).

Importing Parties must make decisions in accordance with scientifically sound risk assessments, which are set out in the Annexures of the Protocol. In cases of insufficient relevant scientific information and knowledge, importing Parties may use precaution in making their decisions on import. Parties may also take into account, consistent with their international obligations, socio-economic considerations in reaching decisions on import of LMOs.

Parties must also adopt measures for managing any risks identified by the risk assessment, and must take the necessary steps in the event of accidental release of LMOs.

To facilitate its implementation, the Protocol establishes a **Biosafety Clearing-House (BCH)** for Parties to exchange biosafety information. Parties are obliged to post a minimum amount of information regarding decision-making on GMOs on this international portal. This is the very heart of the Protocol – it is crucial for it to be properly implemented, as it should function as an information exchange mechanism and provide civil society with an opportunity to access some information on GMOs decision making.

The Protocol contains several provisions dealing with the information that a Party must place on the BCH. This is dealt with in more detail in Section 2.3 below.



The Biosafety Clearing House can be accessed at <http://bch.cbd.int/>, where you can view country profiles and the information they have posted on their decisions, laws and regulatory authorities.

KEY PROVISIONS OF THE BIOSAFETY PROTOCOL

Precaution

The Biosafety Protocol includes clear provisions on the *precautionary principle* that is contained in Article 1, indicating that the objective of the Protocol is “in accordance with the precautionary approach contained in Principle 15 of the Rio Declaration on Environment and Development”. The precautionary principle is contained in the operational part of the Protocol in Articles 10.6 and 11.8, which state that “lack of scientific certainty due to insufficient relevant scientific information and knowledge regarding the extent of the potential adverse effects of an LMO on biodiversity, taking into account risks to human health, shall not prevent a Party of import from taking a decision, as appropriate, with regard to the import of the LMO in question, in order to avoid or minimize such potential adverse effects.”

The fact that the precautionary principle is contained as part of the operational text of the Protocol reflects the international community’s agreement that genetic engineering is an emerging technology fraught with unforeseeable risks. It gives Parties to the Protocol some latitude to reject GMOs that have the potential to cause harm, even if there is no strong supporting evidence of the exact nature of that harm.

The precautionary principle states that “where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost effective measures to prevent environmental degradation.”

Genetic engineering is a deeply complex science, complicated further because it transforms living entities that mutate and interact with other living organisms and local ecologies. Additionally, genetic engineering also has a profound impact on social systems, such as our ethical beliefs, agricultural systems, culture and economy. Calculating risks implies accurately predicting potential hazards and the probability that they will occur, using scientific measures. However, this is seldom possible in reality.

How does one regulate and manage risk in the face of so many uncertainties? The precautionary principle is the core of sustainable practice and incorporates several important components,²⁶ including:

- ◆ Preventative action in the face of scientific uncertainty
- ◆ Shifting the burden of proof of harm to the producer
- ◆ Exploring alternatives
- ◆ Involving stakeholders and the public in decision making.

Advance Informed Agreement

The *Advance Informed Agreement* (AIA) procedure applies to a very small percentage of traded GMOs: the first transboundary movement of LMOs for intentional introduction into the environment (field trial or commercial cultivation) of the Party of import. It includes four components:

- ◆ notification by the exporter;
- ◆ acknowledgment of receipt of notification by the Party of import;
- ◆ the decision procedure; and
- ◆ opportunity for review of decisions.

The purpose of this procedure is to ensure that importing countries have both the opportunity and the capacity to assess risks that may be associated with the LMO before agreeing to its import. The Party of import must indicate the reasons for its decisions (unless consent is unconditional). A Party of import may, at any time, in light of new scientific information, review and change a decision. A Party of export or a notifier may also request the Party of import to review its decisions.

The Protocol's AIA procedure does not apply to certain categories of LMOs:

- ◆ LMOs in transit;
- ◆ LMOs destined for contained use; and
- ◆ LMOs intended for direct use as food, feed or for processing.

However, it is important to note that the AIA procedure **does** apply to GMO imports intended for field trials. Generally, GMOs used in field trials will need to be imported from the country where the technology was developed. In order for field trials to go ahead, a functional regulatory system must be in place and the AIA procedure must be followed. This gives you the opportunity to interact with the decision making process, as set out in the BSP and your own domestic biosafety regulations.

Note that the AIA procedure only applies to a particular genetically modified variety the first time it is imported for field trials or commercial approval. Subsequent applications for further field trials for the same GMO will not be subject to another AIA, but a simplified procedure will apply.

GMOs for food, feed and processing are poorly regulated

It is a major weakness of the Protocol that no AIA is necessary for GMOs imported for direct use as food, feed or processing (FFP), as these are consumed by people and livestock and may be planted, unless milled, when entering the market or food systems. GMOs for FFP, also known as commodities, are shipped around the globe in huge volumes. Permits for import of GM maize and soya for food, feed and processing will likely form the bulk of GM applications in your countries in the future.

However, approval for such imports can be granted even in the absence of a functional national regulatory framework. In terms of Article 11 of the Protocol, which deals with procedures for GMOs intended for FFP, the importing country may approve the GMO as long as it has been approved in the country of export. The importing government is then obliged to post this decision to the Biosafety Clearing House prior to the first import of the GMO in question. However, failure to communicate such decision on the BCH does not imply consent or refusal. The Party of export is also obliged to post on the BCH its decision regarding both the domestic use and intention to export the GMO, within 15 days of making the decision.

The impact of the limitations of the Protocol in regard to the trade in GMOs for food, feed and processing was brought into sharp relief during the latter part of 2010, when South Africa produced a glut of both conventional and GM maize and exported GM maize as commodities to other African countries. Consumers, civil society and even regulating bodies in those countries were largely unaware that GM shipments of maize were being imported from South Africa. Very few of the importing countries had functioning biosafety laws in place and these provisions of the Protocol were relied upon, to legalise the imports.

On the 14th of April 2010, the Business Report announced that according to the latest data from the Crop Estimates Committee (CEC), South Africa's maize harvest for 2009/10 would be 12.9 million metric Tons (MT) (this figure has subsequently been revised upwards to 13.1 million), leaving a potential exportable surplus of 6 million tons. This announcement briskly followed the discovery that during January and February 2010 the South African GMO authorities had granted French multinational grain trader Louis Dreyfus permits to export a staggering 280,000 tons of GM maize to Kenya, as well as permits equal to 3,000 MT to other grain traders for export to Swaziland. In early May a further 11,000 MT of GM maize was given the thumbs up to be exported to Mozambique, together with 35,000 MT of GM soybeans.

As all three destination countries have yet to fully implement their own biosafety laws, this leaves them at the mercy of the Cartagena Protocol on Biosafety (BSP), which, owing to concessions made during its negotiation, has very little jurisdiction over the trade in bulk shipments of GMOs traded for the purposes of food, feed and processing. **As long as South Africa has approved the GM varieties and complied with its obligations to place certain prescribed information on the Biosafety Clearing House in terms of Article 11 (1) of the BSP, any country that is a Party to the Protocol can in fact import shipments without going through any biosafety risk assessment and approval processes, even where their national legislation has not yet come into effect.**

No notification of these transactions will be found on the profiles of South Africa, Kenya, Mozambique and Swaziland on the Biosafety Clearing-House website, despite their signatory obligation. Unfortunately, the failure to monitor the compliance of the obligation to post this information – a pitfall of the Protocol in action – makes the BCH a highly unreliable source of information.

Biosafety Clearing-House

Article 20 establishes a means for information sharing through the *Biosafety Clearing-House*. It is the key instrument for implementing the Protocol. It also ensures an up-to-date repository



Excerpt from ACB's "A Good Neighbour? South Africa forcing GM maize onto African markets and policy makers", available on the Reading CD [file 2.1.2].

of information on LMOs and biosafety in order to assist decision makers, civil society and the biotechnology industry in countries around the world. Special mention is made of the needs of “developing country Parties, in particular the least developed and small island developing States among them, and countries with economies in transition as well as countries that are centres of origin and centres of genetic diversity.” (Art 20 (1)(a)).

The majority of African Parties are still in the process of setting up their profiles on this international portal. Governments also have the option of setting up domestic portals where they may post information, but they are still required to post to the official international website (<http://bch.cbd.int/>). Developing countries have been given a concession in fulfilling their obligations with regard to the BCH. Capacity building and funding has been made available to ensure the necessary infrastructure and expertise to post.

Although the BCH is the very heart of the Protocol — its mechanism for implementation — we have found it to be an unreliable source of information because of lack of compliance, and lack of monitoring of compliance. South Africa has been particularly derelict in this duty, having posted only 18 records, despite having granted over 2,000 permits for GMO activities over the past decade. The dire lack of access to information has severely impacted on the ability of civil society to engage in decision making on GMOs. It also has serious consequences for South Africa’s neighbouring countries that are completely unaware of the staggering numbers of GM permits that South Africa has granted.

Information obligations of the Parties

All Parties to the Biosafety Protocol are obliged to put the following information on the BCH:

- a) Existing national legislation, regulations and guidelines for implementing the Protocol, as well as information required by Parties for the advance informed agreement procedure (Article 20.3.(a));
- b) National laws, regulations and guidelines applicable to the import of LMOs intended for direct use as food or feed, or for processing (Article 11.5);
- c) Bilateral, multilateral and regional agreements and arrangements (Articles 14.2 and 20.3(b));
- d) Contact details for competent national authorities (Articles 19.2 and 19.3), national focal points (Articles 19.1 and 19.3), and emergency contacts (Article 17 .3(e));
- e) Reports submitted by the Parties on the operation of the Protocol (Article 20.3(e));
- f) Decisions by a Party on regulating the transit of specific LMOs (Article 6.1);
- g) Occurrence of unintentional transboundary movements that are likely to have significant adverse effects on biological diversity (Article 17.1);
- h) Illegal transboundary movements of LMOs (Article 25.3);
- i) Final decisions regarding the importation or release of LMOs (i.e. approval or prohibition, any conditions, requests for further information, extensions granted, reasons for decision) (Article 10.3 and 20.3(d));
- j) Information on the application of domestic regulations to specific import of LMOs (Article 14.4);
- k) Final decisions regarding the domestic use of LMOs that may be subject to transboundary movement for direct use as food or feed, or for processing (Article 11.1);
- l) Final decisions regarding the import of LMOs intended for direct use as food or feed, or for processing that are taken under domestic regulatory frameworks (Article 11.4) or in accordance with annex iii (Article 11.6) (requirement of Article 20.3(d));

- m) Declarations regarding the framework to be used for LMOs intended for direct use as food or feed, or for processing (Article 11.6);
- n) Review and change of decisions regarding intentional transboundary movements of LMOs (Article 12.1);
- o) LMOs granted exemption status by each Party (Article 13.1);
- p) Cases where intentional transboundary movement may take place at the same time as the movement is notified to the Party of Import (Article 13.1); and
- q) Summaries of risk assessments or environmental reviews of LMOs generated by regulatory processes and relevant information regarding products thereof (Article 20.3(c)).

Box 2.1

Public awareness and participation are dependent on access to information!

The BSP sets out the following in this regard:

Article 23 – Public Awareness and Participation

1. The Parties shall:

- (a) Promote and facilitate public awareness, education and participation concerning the safe transfer, handling and use of living modified organisms in relation to the conservation and sustainable use of biological diversity, taking also into account risks to human health. In doing so, the Parties shall cooperate, as appropriate, with other States and international bodies;
- (b) Endeavour to ensure that public awareness and education encompass access to information on living modified organisms identified in accordance with this Protocol that may be imported.

2. The Parties shall, in accordance with their respective laws and regulations, consult the public in the decision-making process regarding living modified organisms and shall make the results of such decisions available to the public, while respecting confidential information in accordance with Article 21.

3. Each Party shall endeavour to inform its public about the means of public access to the Biosafety Clearing-House.

South Africa has been an aggressive leader in the promotion of GMOs on the continent for over a decade and has been a Party to the Biosafety Protocol since 2003. The South African government's failure to comply with its obligations to share the above-mentioned information on the BCH with the international community, its citizens and neighbours is a serious breach of its international law obligations. However, when the ACB brought this to the attention of the Compliance Committee of the BSP, no action was taken to reprimand South Africa. The Compliance Committee was of the view that only Parties to the Protocol could lodge complaints and did not consider the ACB's complaint.

Despite many promises from the South African government to remedy this situation, nothing has changed to date. We do, however, believe that although our complaint was not considered, it



Available on the Reading CD: 2 letters to South Africa's Minister of Agriculture on BCH compliance [files 2.1.3 and 2.1.4]; ACB letter to the BSP Compliance Committee [file 2.1.5]; ACB petition calling for support from the public on compliance [file 2.1.6]; Overview of all GMO permits granted in South Africa from 2003 [file 2.1.7]; GMO Permits granted in South Africa for 2009 [file 2.1.8].

did bring to the attention of decision makers the weakness of compliance mechanisms of the Biosafety Protocol. On the Reading CD you will find ACB's letters to South Africa's Minister of Agriculture; ACB's letter to the BSP Compliance Committee; ACB's petition calling for support from the public; and an overview of all permits granted in South Africa since 2003, when the country ratified the BSP. Also included are the permits granted in South Africa for 2009, to give you an idea of the sheer volume of permits being processed in the country (these are available on the website of South Africa's Department of Agriculture and are updated every 3–6 months).

Exercise: *BSP compliance*

1. Make a checklist of the information that you believe the biosafety authority in your country should place on the BCH.
2. If you have access to the Internet, check to see whether there has been compliance with the Protocol. If not, bring this to the attention of the authorities and request that they post the necessary information.

Further guidance for risk assessment procedures

The Meeting of the Parties (MOP) to the Biosafety Protocol identified that the assessment of GM fish, trees, insects, algae and microorganisms needed guidance. GMOs with particular traits, such as stress tolerance or production of pharmaceuticals, or stacked genes, were also identified as requiring further guidance. Consequently, the MOP established an Ad Hoc Technical Expert Group on Risk Assessment and Risk Management (AHTEG) to develop the necessary support.

Four documents have been generated by the AHTEG and were discussed at the Fifth Conference of the Parties (COP 5), held in Nagoya in October 2010; a "roadmap" on risk assessment and risk management of GMOs and three guidance documents dealing with mosquitoes, abiotic stress tolerant plants, and stacked genes.²⁷

According to Ricarda Steinbrecher, of the German Federation of scientists,

"... many of these LMOs are capable of spreading across national boundaries and with potentially serious consequences to global forest, water and marine ecosystems. Some of these LMOs are on the verge of commercial production and release, such as LM fish, LM trees and LM algae.

There is urgent need to address the issue of unintentional but unavoidable transboundary movement that has the potential to affect ecosystems way beyond the point of release. This may not only occur from intentional releases into the environment but also from breach of containment during transit (e.g. eggs, larvae, insects) or from contained use (e.g. fish, algae).

These issues need to be addressed at many levels, including at the stage of risk assessment as well as at the level of decision making ..."²⁸

At the fifth MOP, held in Nagoya, Japan in October 2010, several recommendations made by the AHTEG were challenged by numerous Parties and industry representatives. The Parties agreed to include further representatives on the AHTEG and gave directions for further work to be done.

Box 2.2

Bilateral negotiations skirt the Protocol

Just a handful of corporations control global trade in the world's major agricultural crops. Three companies – Cargill (US), Archer Daniels Midland (US) and Louis Dreyfus (France) – control over 80% of the global grain trade. The concentration is particularly pronounced among the three GM crops that are traded internationally: maize, soybean and oilseed rape. World trade in soybeans, for example, is dominated by just four companies: Bunge, Cargill, ADM and Dreyfus. When people think of GM foods they often think of Monsanto, the seeds and pesticides producer. But the grain traders, who buy and sell the harvested crops, are also involved and actually wield much more influence.



Excerpt from ACB's "Bilateral Biosafety Bullies", available on the Reading CD [file 2.1.9].

Over the past few decades, the grain merchants have ruthlessly pushed an agenda of market liberalisation and expansion through the multilateral trade and finance institutions. Their parallel objectives are to secure a giant global market, free of barriers to the free movement of their products, and favourable production conditions from national and local governments – access to subsidies, enforcement of intellectual property rights, enhanced public infrastructure, lax environmental and labour regulations, etc. The downward harmonisation of health and safety standards is a key component as well because, in order to maximise their profits, corporations need to be able to ship any product anywhere in the world without having to worry about differing requirements when it comes to issues such as labelling.

Liability and redress

Liability and redress has been one of the most contentious issues since the development of the Protocol. Civil society has fought hard for a rigorous regime that lays the responsibility for damage on the producers. This is especially important for Africa, as we are the receivers of the technology and damages arising from GMOs could have widespread consequences for centres of origin and diversity, biodiversity in general, and environmental and economic systems. Unfortunately, the negotiations concluded with a weaker regime than we would have hoped for, as the excerpt below explains.

Ten years after the Cartagena Protocol on Biosafety (Biosafety Protocol) was adopted, the Parties to the Protocol met in Nagoya, Japan (11-15th October 2010) to adopt a new Treaty, the 'Nagoya-Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety' (Supplementary Protocol). This new Treaty will need to be ratified by at least 40 Parties to the Biosafety Protocol before it can come into effect. Its consequent implementation will take place within the overall framework of the Biosafety Protocol in an integrated manner.

The Supplementary Protocol is very different from the campaign fought for by developing countries, concerned scientists, small-holder farmers and NGOs. Instead of an international civil liability regime that establishes rules and procedures for redress on the part of third parties for damage arising from GMOs, the Supplementary Protocol comprises of a set of administrative measures that Parties to such a Protocol would need to legislate for and implement. An international civil liability regime would have provided recourse for damage caused by GMOs by establishing rules that would have: identified the persons liable for the damage



Excerpt from ACB's "Biosafety Protocol: Ten years on and lagging far behind", available on the Reading CD [file 2.1.10].

caused; provided redress for the harm caused; defined the scope of damage; provided for strict liability; addressed issues concerning access to justice; jurisdiction of the courts and so forth.

In sharp contrast, the Supplementary Protocol merely creates a set of international administrative rules, which places the responsibility on the Parties to take measures to clean up the environment in the case of damage to biodiversity arising, and seek redress from the person causing the damage. Similar administrative measures already exist in South Africa's Genetically Modified Organisms Act. If South Africa were to ratify the Supplementary Protocol, only minor amendments may be necessary, but no new legislation will have to be passed to implement the Supplementary Protocol.

Nevertheless, the existence of the Supplementary Protocol does signal the willingness of the international community to acknowledge that GMOs cause harm to biodiversity and that measures have to be taken to clean up. Third parties who suffer damage as a result of GMOs will have to continue to rely on domestic 'tort' or 'delict' law for redress.

IN CONCLUSION



*Excerpt from
ACB's "Biosafety
Protocol: Ten years
on and lagging far
behind", available
on the Reading CD
[file 2.1.10].*

The Biosafety Protocol has certainly been useful in providing Parties with an international reference point in crafting national biosafety regimes. However, to a large extent, this value at least in Africa is being superseded by regional initiatives to harmonise biosafety laws. Parties certainly do have access to an international space for information exchange and the constructing of further rules and procedures to elaborate the Protocol in an attempt to ensure its effective implementation. However, there is a huge disconnect between the rather timid, insipid and potentially dated work of the Protocol and the huge biosafety challenges presented on the domestic level in many countries.

2.2

THE AFRICAN MODEL LAW ON BIOSAFETY

Outcome

Be aware of the high level of biosafety recommended by the African Union and compare it with your country's biosafety regime.



The Organisation of African Unity (OAU), predecessor to the African Union (AU), developed the African Model Law on Safety in Biotechnology. This was done because the OAU recognised "... the challenges faced by Member States to implement the [Biosafety] Protocol and its weaknesses as an international negotiated instrument capable of regulating Biosafety in the continent, especially with regard to the development of domestic GMOs, the use of GMOs in contained systems, the approval of deliberate releases into the environment and approval and labelling of GM food ...".²⁹

The Model Law is a set of holistic and stringent biosafety rules drafted by a number of African biosafety experts and crafted specifically to protect African countries from the risks posed by GMOs. The African Union Summit held in Maputo in July 2003 pointedly encouraged African countries to use the Model Law as a basis for biosafety regulation. Unfortunately, these guidelines are voluntary and are not always used. USAID has taken advantage of the lack of capacity for biosafety in Africa and provided funding, capacity building and infrastructure in a bid to influence weak biosafety law making.

The draft of the *OAU African Model Law on Safety in Biotechnology* (Model Law) was finalised on May 4, 2001 in Addis Ababa by the biosafety working group of the former OAU and its speedy finalisation supported by the OAU Assembly Heads of State and Government in July 2001 in anticipation of the enactment of the provisions of the Cartagena Protocol on Biosafety (Biosafety Protocol). The Model Law is an attempt to facilitate the harmonising of existing legislation in the area of biosafety and to ensure the adoption of unified legislation in Africa. It therefore provides a carefully crafted and comprehensive framework of biosafety regulations that have been specifically designed to protect Africa's biodiversity, environment and the health of its people, from the risks posed by genetically modified organisms (GMOs).

The Model Law has been strongly influenced by the Biosafety Protocol, which is acknowledged to be the foremost international environmental agreement dealing with GMOs. The Protocol provides a legally binding framework of rules to be applied to the import, export, transit, handling and activities related to the use of GMOs in order to protect biodiversity, the environment and human health from the risks posed by GMOs. Most significantly, the Biosafety Protocol specifically recognises that scientific knowledge about GMOs is incomplete, and allows countries to take measures to prevent harm to the environment and human health, in the absence of scientific certainty about that harm.



Available on the Reading CD: "Draft revised African Model Law on Biosafety – January 2008" [file 2.2.1].



GRAIN – "USAID: Making the world hungry for GM crops". <http://www.grain.org/briefings/?id=191>



Excerpt from "Why Africa should adopt the African Model Law on Safety in Biotechnology", available on the Reading CD [file 2.2.2].

The Model Law seeks to introduce just such measures and specifically recognises that Africa's biodiversity, environment and the health of its people can only be protected if countries in Africa adopt high standards of safety and by subjecting the entire spectrum of GMOs, its products and GMO related activities to rigorous safety assessments. The Model Law therefore considers the rules established by the Biosafety Protocol as a 'floor' rather than a 'ceiling' in determining the regulatory framework. In other words, that these rules are the *minimum standards* for achieving the objectives of the Protocol. In this regard, the Model Law fully utilizes the discretion given by the Protocol to the Parties to adopt more protective measures than the agreed minimum set out in the Protocol.

This approach is also in keeping with the need for special measures to be taken to conserve centres of origin and diversity of major crops and to prevent negative impacts on such centres. In this regard, the Biosafety Protocol expressly recognises the crucial importance to humankind of centres of origin and centres of diversity. Sub-Saharan Africa, Sudan/Chad are, for example, considered to be the centre of origin of sorghum. Sub-Saharan Africa is the centre of diversity of cassava, while Ethiopia, the Saharan oases and Sudan are centres of genetic diversity of wheat. These are all major sources of food for millions of people requiring the highest standards of safety and protection from genetic contamination.

Furthermore, the Model Law adopts the approach that proper application of the precautionary principle demands thorough regulation of the series of activities that may be undertaken in respect of a GMO. These activities include the import, transit, contained use, release or placing on the market of a GMO and the product of a GMO. This approach is in keeping with the Article 8(g) of the Convention on Biological Diversity (CBD), whereby Parties to the CBD are obliged to 'regulate, manage or control the risks associated with **the use and release** of living modified organisms resulting from biotechnology which are likely to have adverse environmental impacts, that could affect the conservation and sustainable use of biological diversity, taking into account the risks to human health.' (own emphasis). More importantly, however, is that such regulations can be introduced independently from any other recognised instrument in this field, including the Biosafety Protocol.

Finally, the Model Law strives to provide a holistic and comprehensive set of biosafety rules, including the issues that are not dealt with by the Biosafety Protocol. These include mandatory labelling and identification/traceability for GMOs and genetically modified food, and liability and redress for harm caused by GMOs to human health, the environment and for resultant economic loss. African countries have the sovereign right to take such measures, which the Biosafety Protocol in any event cannot and, indeed, does not preclude.

A fragmented biosafety system does not allow for the unique risks of GMOs to be fully taken into account and be specifically and appropriately regulated. Holistic legislation is necessary to provide consistency and enable streamlined and hence more transparent decision-making. Such an approach will enable discreet sectorial treatment of the subject matter and avoid the creation of gaps and loopholes. The Model Law seeks to establish just such a holistic framework.

2.3

HEADS UP ON THE REGIONAL ECONOMIC COMMUNITIES' PROPOSED ROLE IN BIOSAFETY

Outcome

Understand why biosafety harmonisation through the Regional Economic Communities is a threat to biosafety regulation in your country.



The spirit of the African Model Law on Biosafety is being undermined by efforts to “harmonise” biosafety laws on the continent. The harmonisation project is comprehensively supported and funded by USAID and the World Bank. This project is set out in the African Union’s Biosafety Strategy, which envisions Regional Economic Communities (RECs), bodies that facilitate regional trade on the continent and will implement the African Biosafety Strategy. These RECs have no capacity to regulate biosafety; rather their interest is in proliferating proprietary GM technology throughout the continent with as little oversight as possible.

The major thrust of the Strategy is to harmonise laws and procedures for a pan-African biosafety system and to assist in the development of regional “centres of excellence”. The harmonisation of biosafety laws means that a single, one-stop GMO approval system will be established, and country by country decision making would be avoided. Although there is strong political will within the AU to protect African biodiversity and society, powerful industry lobbyists are using the harmonisation process to facilitate the proliferation and advancement of GMOs on the continent.

The Common Market for Eastern and Southern Africa (COMESA) and the Economic Community of West African States (ECOWAS) are at an advanced stage in the development of their harmonisation policies, which will be binding on their members. The draft policies represent a clear threat to the autonomy of their member countries to make decisions regarding GMOs on a case-by-case basis, limit public participation in decision making and contravene many provisions of the Biosafety Protocol.



Available on the Reading CD: “The Revised African Model Law on Biosafety and the African Biosafety Strategy” [file 2.3.1]; “Ongoing concerns about harmonisation of biosafety regulations in Africa” [file 2.3.2]; COMESA’s draft policy statements and guidelines on GMOs [file 2.3.3]; ACB’s “Comments on COMESA’s draft policy on GMOs” [file 2.3.4]; Draft ECOWAS policy documents on GMO approval and the establishment of a biosafety committee [files 2.3.5 and 2.3.6].

2.4

CASE STUDY — *SOUTH AFRICA'S BIOSAFETY POLICY ENVIRONMENT*



Outcome

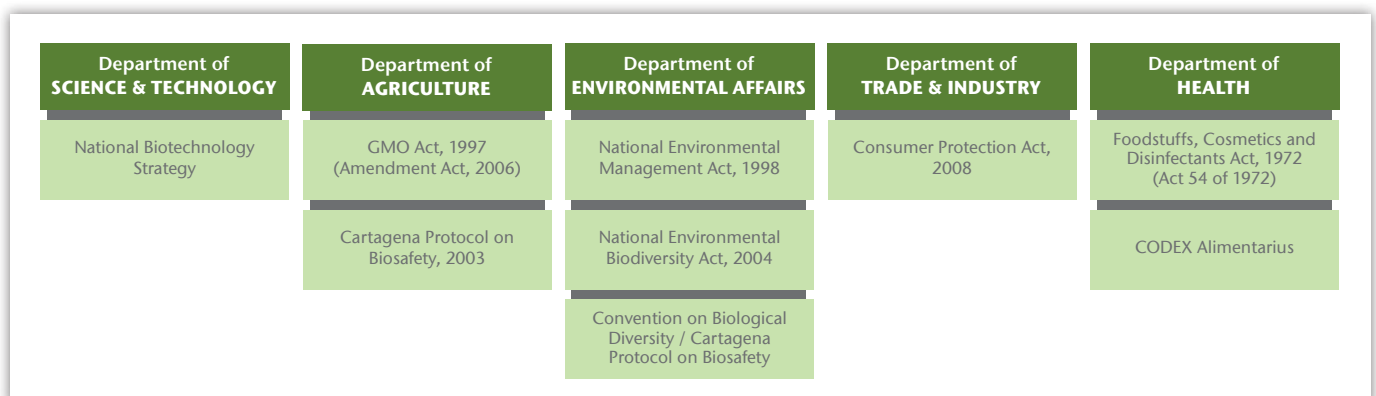
Be aware of the dangers of the South African regime and use these to alert you to similar shortcomings in your own national framework.

LECTURE RESOURCE

South Africa began experimenting with GM crops as far back as 1997, but it was only in 1999 that the GMO Act came into effect. In that same year, the first GM maize crops were commercially released. South Africa is commonly referred to as the “springboard into Africa”. It is natural for African governments to look to South Africa for guidance on GMOs because of the long experience with the technology and related legal and administrative processes. Unfortunately, this means that the weak biosafety laws, drafted with undue influence from the biotech industry, stand to be replicated all over the continent. We would like to draw your attention to our experience of GMO legislation and alert you to some of the difficulties we have encountered.

Figure 2.1 sets out the legislation that directly relates to genetically modified organisms. In addition, the South African Constitution ensures the right to administrative action that is lawful, reasonable and procedurally fair, as well as the right to access to information. We have invoked these constitutional rights through the use of the Promotion of Administrative Justice Act (PAJA) as well as the Promotion of Access to Information Act (PAIA).

Figure 2.1: *Graphic representation of South Africa's biosafety policy environment*



The critique of the South African system may assist you in identifying potential problems with your own domestic legislation. You will find invaluable information on the ACB website, where we have critiqued many of the Biosafety Bills and Acts of African countries. We encourage you to use these to build your own capacity.

The Genetically Modified Organisms (GMO) Act

The South African GMO Act does not constitute an adequate biosafety regime that ensures GMOs are appropriate and do not cause harm to the environment or to human and animal health. The most serious shortcomings include the following:

Inadequate provision for public participation

The only opportunity for public participation is through a notice and comment procedure linked to permit applications for environmental releases. This means that there is no public participation where applications are exempted from the permit requirements of the Act. Express provision is made for any application that is “cleared” for commercial release and/or for food and animal feed to be exempt from the permit requirements of the Act. This means that decisions can be made — out of the public eye and without the knowledge of the public — to approve any GMO, whether locally produced or imported. Moreover, this can be achieved without there being a need to abide by the decision making procedure of the Act.

Similarly, GMOs that are dealt with under “contained use” conditions (laboratories and greenhouses) are also exempt from the permit requirements of the Act. Indeed, the notice and comment procedure simply pays lip service to the notion of public participation. It appears as if the intention of the GMO Act is to preclude the public from gaining access to information on the potential or likely impact and risks posed by the GMO concerned to human and animal health, biological diversity and the environment. The Act appears to provide for the right of access only to information regarding the “evaluation of foreseeable impacts, in particular any pathogenic or ecological disruptive impacts”. However, even this right is watered down, because such information can be withheld in order to protect the intellectual property rights of the applicant.

Products of GMOs

The Act applies only to viable, living GMOs, and not to the products derived from GMOs. Such products include, for example, flour made from transgenic maize or soya, tomato sauce, and eggs from chickens fed with transgenic maize. Emerging scientific evidence shows that a considerable amount of the recombinant DNA persists in products such as soy proteins derived from transgenic soya. This can be transferred to the microflora in the intestinal tract of humans and animals, and thence to the environment, including soil and water systems. Products of GMOs per se are not regulated by any specific legislation, so they are not subject to specially tailored safety testing. Instead, it is generally accepted within Government that a test called “substantial equivalence” be applied. This test has been discredited by some commentators as being unscientific and arbitrary.

Risk assessment

The original GMO Act did not set out the principles and parameters of a risk assessment, relying instead on the use of voluntary and incomplete guidelines. Guidelines for the methodology of risk assessments were published in 2004. The Act was amended in 2006, with the new regulations coming into force in 2010. These processes have tightened up the risk assessment procedures.



Excerpt from ACB's
"Overview of GMO
Regulatory Regime
in South Africa",
available on the
Reading CD
[file 2.4.1]

The new Regulations stipulate that risk assessments must be conducted in a scientifically sound manner, taking into consideration recognised risk assessment methods and techniques that are currently applied at national, regional and international level. The Regulations go further to stipulate that any risk assessment shall entail, as appropriate, the following steps:

- ◆ Identification of any potential adverse effect resulting from the novel genotypic and/or phenotypic characteristics of the GMO;
- ◆ An evaluation of the likelihood of these adverse effects being realized, taking into account the level and kind of exposure of the potential receiving environment to the GMO;
- ◆ An evaluation of the consequences should these adverse effects be realized;
- ◆ An estimation of the overall risk posed by the GMO based on the evaluation of the likelihood and consequences of the identified adverse effects being realized.

This risk assessment is to be conducted on a case-by-case approach and shall include the consideration and evaluation of all available relevant scientific information, including expert advice of, and guidelines developed by, relevant international organizations. The applicant is required to provide the data on which the risk assessment was based, together with the application, to the registrar. To a large extent, this accords with Annexure III to the Biosafety Protocol.

We have referred to the shortcomings of an adherence to "science based" assessment that effectively keeps subjective concerns with the impacts of GMOs out of the decision making process. The new regulations suffer from this same flaw in the formulation of the Precautionary Principle as set out in the regulations. It stipulates that "a lack of scientific knowledge or scientific consensus shall not be interpreted as indicating a particular level of risk, an acceptable risk or an absence of risk". This is a weak or neutral interpretation of the Precautionary Principle that reflects a "rationalist faith in the objective application of scientific principles".³⁰ Although the regulations do allow for socio-economic factors that may impact on indigenous or local peoples, this is not enough. Contemporary "sustainability science" has broadened its scope to include "scientific, economic, legal and other disciplinary understandings and knowledge",³¹ which is more appropriate for such a complex living technology as genetically modified organisms.

Precautionary Principle

The cornerstone for decision-making in regard to biosafety assessment is the use of the Precautionary Principle. Even though the South African Government has acknowledged this in its Biodiversity White Paper and General Environmental Policy, and the principle has been entrenched in the National Environmental Management Act, the drafters of the GMO Act have crafted a principle in Regulation 3(2) that appears to be designed to negate the Precautionary Principle.

Liability

The provisions dealing with environmental liability are astounding. The Act attempts to absolve those responsible for the development of GMOs from liability by placing statutory liability for environmental damage on the "users" of GMOs. This would include farmers growing GMO crops and even consumers. It is indeed disconcerting that Government should want to protect the biotechnology industry from liability. These provisions undermine the basic tenets of justice and equity and are completely at odds with the "polluter pays" principle advocated in Government policy.

Notification of decisions

An appeals procedure has been created, but this is only useful to members of the public if they know when an applicant has been notified of the approval. No provision has been made for notifying the public of an approval. The onus is on the public to find out when an applicant was notified of a decision, in order to lodge an appeal timeously — namely, within 30 days from the date the applicant was notified.

2.5

CASE STUDY — *A DECADE OF LOBBYING HAS RESULTED IN A LABELLING REGIME*

Outcome

Understand the major issues to be dealt with in labelling regimes to inform your position in your own country.



GM foods have been sold without being labelled in South Africa since GMOs were first commercialised in 1999. South Africa is the only country in the world that has allowed the genetic modification of its staple food — maize. Whereas in the United States maize is eaten, for the most part, in highly processed forms (e.g. corn chips), maize meal is a staple for the majority of South Africans. Low income earners spend up to 20% of their wages on maize.³² Maize meal is also commonly used as the first weaning food for infants.

Currently most grain is stored in unsegregated silos, with some segregation taking place to allow for GM free exports of maize products to the European Union.

While civil society has lobbied vociferously and consistently for the mandatory labelling of GM foods, since the introduction of these foods the biotech industry has campaigned against such labelling. The industry claims that GM maize and soya has been safely consumed in South Africa for almost a decade with no history of damage to health, and that there is therefore no need for labelling. This is a highly disingenuous statement, because the absence of labelling makes it impossible for people to pinpoint GM food as the cause of illness and therefore be able to report it.

The South African government regards as safe all food derived from GMOs that have been approved. Consequently, the campaign in favour of mandatory labelling was based on issues concerning consumer choice and the right to know, as opposed to food safety concerns. Food labelling already in existence in South Africa is based on choice rather than safety. For example, labels such as halaal or kosher, or listing of ingredients such as preservatives, MSG and so forth, are not warnings about the dangers of consuming certain ingredients contained in the foods, but to provide the consumer with information and choice. Indeed, such foodstuffs may well not be on the market if they are regarded by health authorities as being unsafe.

South Africa first introduced provisions to label GM foods some six years after GM foods were first introduced onto the market. In 2004, the *Regulations Relating to the Labelling of Foodstuffs*

Obtained Through Certain Techniques of Genetic Modification were made in terms of section 15(1) of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act, No.54 of 1972) under the auspices of the Department of Health. These regulations followed the United States model, which considers GMOs to be “substantially equivalent” to their conventional counterparts and, as such, only required labelling if there was a ‘significant difference’ in the final food. Such significant differences would be the inclusion of human or animal genes, the presence of allergens, if the altered food required different cooking or if nutritional composition was altered. These regulations were of no force and effect as there is no GM foods currently commercialised that would fall within its scope.

Civil society continued to lobby for meaningful labelling and an opportunity was presented, in 2009, with the drafting of the Consumer Protection Act and its regulations, which falls under the Department of Trade and Industry. The African Centre for Biosafety immediately offered the Department support in drafting the relevant provisions on GM food labelling and was given many opportunities to make both oral and written interventions.



The ACB hosted a stakeholder workshop and invited experts and civil society activists as well as food retailers and producers to facilitate discussion, alert them to the regulations and build capacity on labelling issues. We also published a position paper on labelling, along with a fact sheet covering the most salient issues. Finally, we developed a web-based campaign and petition to get the public involved. These materials and a related press release are provided on the Reading CD.

The final labelling regulations have come into force on 1 October 2011. Many concessions were made to the biotech industry in the final regulations. However, GM foods must now be labelled and there is some scope to finally force industry to provide the consumer with a choice. The major pitfall of our final labelling regulations is that provisions for **five** possible labels have been made. This is very confusing for the public and provides loopholes for industry to circumvent their obligations.

Another problem is that a threshold of 5% has been set — meaning that there can be up to 5% GM contamination or content in a food before labelling is triggered.

See www.labelgmfoods.org.za
Available on the Reading CD:
ACB's position paper on labelling [file 2.5.1];
ACB's fact sheet on labelling [file 2.5.2];
ACB's press release on labelling [file 2.5.3];
ACB's petition to consumers on labelling [file 2.5.4].

THE FIVE LABELS

Effective from 1 October 2011, food producers, importers and packagers are required to choose one of three mandatory labels for GM foods and marketing materials:

- ◆ Where the GM content is at least 5%, the food will be labelled as ‘containing GMOs.’
- ◆ Where the food is produced directly from GMO sources, there will be no need for testing, and food must be labelled as ‘produced using genetic modification’.
- ◆ Industry may also opt for ‘may contain GMOs’ labels in circumstances where they are able to argue that it is scientifically impractical and not feasible to test food for GM content. This provides industry with broad latitude to circumvent the labelling regime and the need for testing — and, in so doing, to undermine consumer choice.

Two voluntary labels are also permissible:

- ◆ ‘Does not contain GMOs’, where the GM content is 0.9% or less .
- ◆ ‘GM content is less than 5%’, where the GM content is between 1% and 4.9%. Few food products are likely to be labelled as not containing GMOs owing to the widespread contamination in South Africa between GM and non-GM food.

THRESHOLDS FOR ADVENTITIOUS PRESENCE

The regulations allow for up to 5% contamination of GM before a label is triggered. This threshold was set unreasonably high because of pressure from the biotechnology industry, backed by USAID, to facilitate the easier export of bulk shipments. The reason drafters gave for this high threshold is that testing for under 5% is prohibitively expensive. However, the head of the GMO Testing Facility based at the University of the Free State, Dr Chris Viljoen, informed drafters and publicly stated that this is untrue. Nonetheless, the pressure from industry was too great and the threshold remained.

The 5% threshold is at odds with the threshold set for export shipments of 0.9% set by the European Union, with which South African exporters have to comply. The African Model Law also recommends this lower threshold. In order for the labelling regime to have an impact and to be useful, it will be necessary to educate the public to read labels, to understand the labels and be aware of what GMOs are and the risks that they pose.

Box 2.2: *Labelling regimes around the world*

Some of the key differences in the labelling regimes that have been implemented around the world include:

- ◆ Whether they are mandatory or voluntary;
- ◆ Whether they label detectable traces of genetically modified DNA in the final product or set up traceability systems to track products resulting from genetically modified processes or crops through the food chain; and
- ◆ What threshold level they set for adventitious presence of GMOs in the food chain – ranging from 0.9–5% (except in the case of China, which has set no threshold).³³

The European Union is regarded as having set the benchmark for a stringent labelling regime that ensures consumers have access to meaningful and accurate information. Such a system is designed to give consumers a choice regarding what they eat, based on ethical, religious, health or other concerns. The first regulations, developed in 1997, were strictly product-based, meaning that only detectable DNA in the final product triggered labelling. However, in 2003, they improved their labelling system by moving to a “process based” traceability system of GM food and feed. Labelling now covers a range of products, including processed products such as starch, high fructose corn syrup and highly refined oils, irrespective of whether there is traceable transgenic DNA. Process based labelling is also legally required under Chinese and Brazilian law.³⁴

In addition, European importers have worked hard to set up systems and cleaning machinery to ensure that their 0.9% threshold for adventitious presence is maintained. Countries that have adopted less stringent regimes, for example setting thresholds for adventitious presence between 3 and 5%, have done so at the behest of the powerful agricultural commodity exporting countries, in particular, the United States. Such a high threshold benefits these exporters of commodities rather than the consumers to whom their produce is delivered.



*Excerpt from
ACB's submission
on labelling
regulations,
available on the
Reading CD
[file 2.5.5].*

ACCESS TO INFORMATION

Access to information and public awareness are vital to ensure that citizens' rights are upheld. Access to information in South Africa has been limited due to lack of administrative capacity, the right of applicants to withhold confidential business information as defined by them, and unfair administrative procedures as set out in the GMO Act.

The Biowatch case

A significant test case in terms of access to information was *Biowatch Trust v Registrar, Genetic Resources, and Others*. The South African NGO Biowatch went to court to demand information on GMOs that was held by the Department of Agriculture. Several companies, most significantly Monsanto, joined the proceedings to protect their rights to withhold confidential business information.

The Judge ruled that the Department of Agriculture had not fulfilled their obligation to decide what information should be publicly available and to allow access to that information. Biowatch was duly awarded access to about 95% of the information they had sought. However, the Judge also ruled that Biowatch had requested information in such broad terms that it had forced Monsanto to join the litigation to defend their confidential business information. In a crushing blow to Biowatch, the Judge ordered them to pay Monsanto's costs. This decision was overturned in a Constitutional Court Appeal judgement six years later.



Excerpt from ACB's "Public comments on Promotion of Access to Information Amendment Bill, 2011: Access to Information in the Context of Genetically Modified Organisms", available on the Reading CD [file 2.5.6].

The issue of the state's obligations to provide certain information regarding GMOs to the public was the subject of litigation instituted by the NGO Biowatch. In the case of *The Trustees, Biowatch Trust v Registrar, Genetic Resources, and Others*, Dunn AJ addressed the issue of how commercial confidentiality should be approached. The permit applicants (which included Monsanto, Stoneville and D&PL SA) had argued that the issue of the protection of confidential, technological and private information would justify a refusal to grant access to information sought by Biowatch. While it was noted in the judgment that the right of access to information is not an absolute right, and has to be balanced with justifiable governmental and private concerns for maintaining confidentiality of certain information, it was also noted in the judgment regarding any refusal to grant access based on PAIA or the limitations clause contained in the SA Constitution that:

Obviously the onus of justifying such a limitation would be on the person who seeks to limit the right... The same applies to PAIA, because the burden of establishing that the refusal of a request for access is justified rests on the party claiming the refusal.

While Biowatch was largely successful in obtaining a High Court judgment in its favour relating to information requested, it was burdened with an adverse costs order in favour of Monsanto. On appeal against this costs order, the Constitutional Court commented that the state had a duty to:

... grasp the nettle and draw an appropriate line between information to be disclosed and information to be withheld.

The judgment noted further that Monsanto was joined in the matter:

... because the governmental authorities had failed to exercise their constitutional and statutory obligations to separate the confidential wheat from the non-confidential chaff.

In the circumstances the appeal succeeded, with the Constitutional Court concluding that where the state is shown to have failed to fulfil its constitutional and statutory obligations,

and where different parties are affected, the state should bear the costs of litigants who have been successful against it, and ordinarily there should be no costs orders against any private litigants who become involved.

The reasoning of the High Court and the Constitutional Court therefore supports the ACB's contention that the permit applicant has the onus of establishing that any refusal is justified on the basis of commercial confidentiality, and that the Executive Council has a statutory obligation to decide what information can justifiably be withheld on the basis that it is bona fide commercially confidential information. Any abrogation of this duty would taint the permitting decision as unfair and legally flawed.

The Spunta G2 Potato appeal

The issue is further illustrated by ACB's experience in the Spunta G2 Potato appeal. In 2009, the Executive Council (EC) refused to grant the African Research Council (ARC) a permit for the general (commercial) release of genetically modified potatoes. The ACB, who had objected to the permit being granted, discovered through informal channels that the ARC had appealed against the refusal. As a consequence, the ACB wrote to the Minister requesting an opportunity to represent its views in the appeal process. A formal request for a copy of the ARC's appeal document was also made. This request was refused on 29 November 2009, with the Department justifying its refusal on the basis that "the ARC documents in respect of the appeal ... is (sic) regarded as confidential as the ARC applicant feels that if the appeal letter is made public now, it may influence the process and/or outcome of the appeal." The ACB appealed to the Minister against this refusal on 25 January 2010. One of the grounds of appeal was that the information was already publicly available.

Within this context, the ACB's attorney wrote to the Minister asserting the ACB's right to make representations in the appeal process, requesting that the Department's officials be instructed to provide the ACB with the relevant contacts details of the Appeal Board, and requesting the Minister to make her decision on the ACB's PAIA appeal. While no response was received from the Minister, on 26 November 2010 the Director of Biosafety wrote to the ACB advising that the Chairperson of the Appeal Board was of the view that:

"in order for the ARC appeal to be lawful, reasonable and procedurally fair, the ACB must be given an opportunity to make representations to the Appeal Board regarding the ARC appeal. The Chairperson appreciates that in order for you to make representations, you may require certain information forming part of the ARC appeal process ... however ... certain of the information contained in the ARC's appeal may be confidential and ... the ARC may legitimately object to the provision of this information."

The ACB was requested to provide a list of the information required to make representations to the Appeal Board, and to provide a comprehensive motivation as to why this information was required. The ACB responded by pointing out that the ACB had not been afforded sight of the documentation founding, forming part of, or supporting the ARC's appeal, and that it was in the dark regarding the grounds of appeal. As a consequence, the ACB requested the ARC's grounds of appeal and any documentation or specialist reports put up to support its grounds of appeal. A motivation was also provided setting out why the dictates of procedural fairness required that this information be furnished.

On 25 February 2011, the Director of Biosafety wrote to the ACB on behalf of the Appeal Board advising that the Appeal Board had met on 7 February 2011, and had decided that the issue of confidentiality did not arise as the documentation comprising the appeal was already in the public domain. A copy of the ARC's eight page grounds of appeal was provided to the ACB, together with an invitation for the ACB to make representations within 21 days.

While the identities of the Appeal Board members remain secret, its decision to recognise the ACB's right to make representations, and to have access to the appeal documentation, is commendable. The Appeal Board also appears to have applied its mind to whether the ARC discharged its onus to justify a refusal on the grounds of confidentiality. The reasonable and fair approach applied by the Appeal Board stands in stark contrast to the Department of Agriculture information officer's refusal to grant the ACB access to the information on the spurious grounds discussed above. It is also significant that this information was supplied within the GMO permit appeal process, and outside of the context of a formal PAIA application.



Exercise: *Development of legislation*

Time: At least 45 minutes.

Resources: If possible participants should research their National Biosafety Frameworks (NBFs) beforehand, and bring them to the workshop.

Exercise:

In plenary, participants should share experiences with the development of biosafety legislation in their own countries –

- ◆ What has the process been like?
- ◆ What have the major problems and victories been?



Exercise: *Discuss regulatory issues*

Time: At least 90 minutes.

Resources: Sections 2.1, 2.2 and 2.4 of this handbook.

Exercise:

1. Give participants up to an hour to read through the text given in this handbook on the Biosafety Protocol, Model Law and South Africa's regulatory regime.
2. Convene a plenary session and encourage participants to engage in a question and answer session or contribute by making comments.

OTHER USEFUL LINKS:

ACB comments on African biosafety legislation, country by country:

<http://www.acbio.org.za/index.php/gmo-regulatory-issues>

3

IDENTIFY YOUR ALLIES



Outcome

Identify and agree on what groups and individuals can assist and support you, and in what manner.

A wide variety of expertise is needed to engage in this complex field and we advise you to begin looking for resources that can assist you in analysing biosafety laws, the science involved in biosafety decision making, environmental issues and building public pressure. Once you get to know the procedures that are followed in your country for the permitting of GMOs, you will know who to include, when and how. Start building those relationships now. It is also good to divide the work up and to know who is dealing with what aspect and how, and when you come together as a coalition. The following exercise can help you to identify your resources and partners in a very visual way.



Exercise: *Identify your allies*

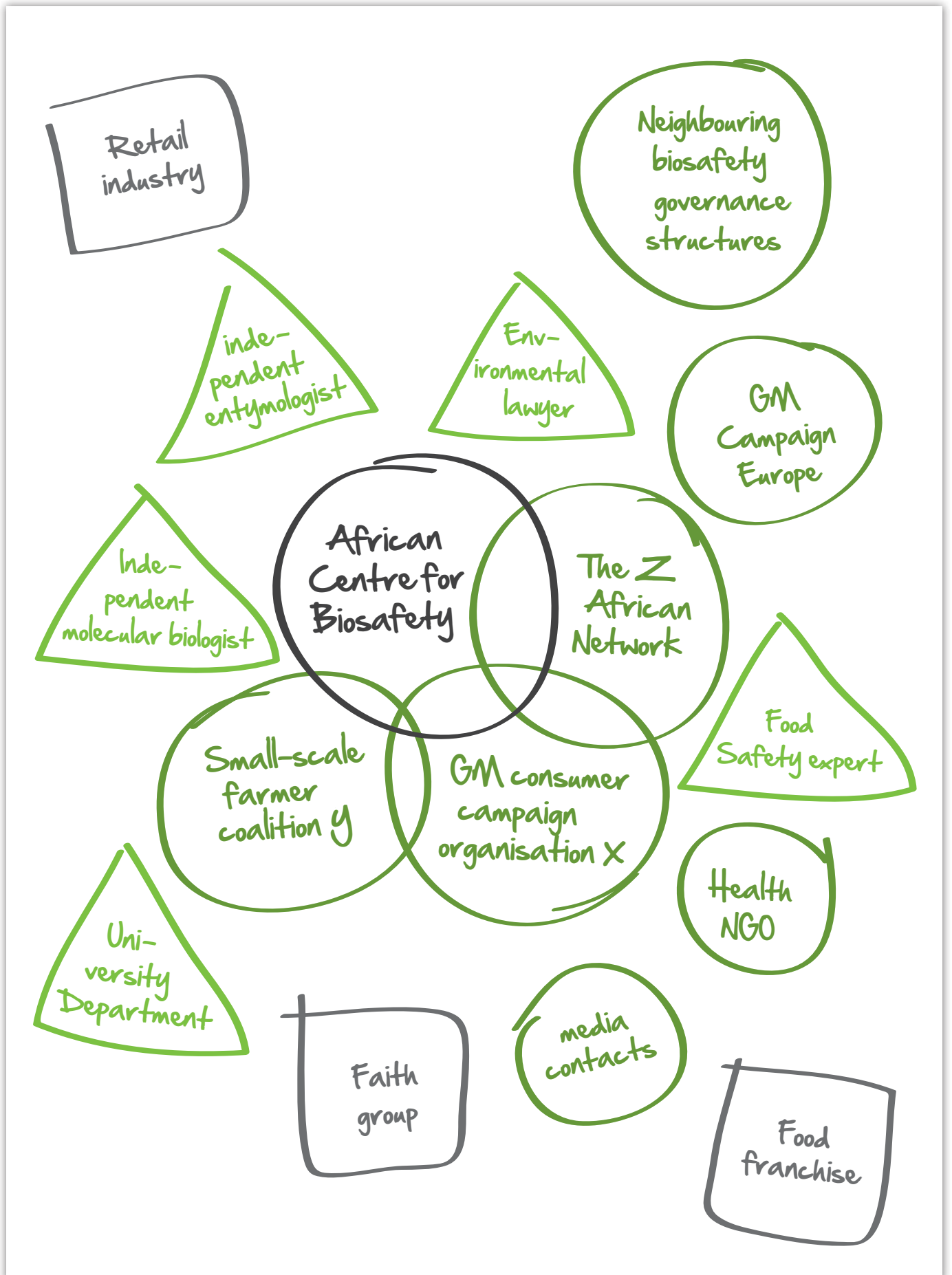
Time: 60–90 minutes.

Resources: Flipchart paper and pens.

Exercise:

1. Break into groups and create a Venn diagram of your allies.
Examples of possible allies: NGOs, CBOs, farmers groups, experts (e.g. scientists, lawyers, economists), the media, Government at all levels, consumer organisations, affected stakeholders (e.g. retailers, farmers in proximity to GM activities).
 - ◆ Mark a circle in the middle of a flipchart (or stick 4 together): this circle represents your group.
 - ◆ Use circles to denote other groups and individuals that could be your allies. Where you have actual names put them down. Mark them closer or further to you depending on your relationship. Some of these may even overlap your circle.
 - ◆ Use triangles to denote experts (such as scientists, economists, lawyers, etc.) that could assist where necessary. Again mark their distance accordingly.
 - ◆ Use squares to denote people and groups that could have shared interests in your struggles but are not necessarily of the same mind or political orientation (e.g. retailers).
2. Stick all the pages on the wall and allow participants 10–15 minutes to peruse them.
3. Have a plenary discussion on participants' thoughts.
4. Get 2 or 3 volunteers to assimilate the Venn diagrams into a list of affiliates, experts and allies. Stick the list up and allow participants to fill in contact details if they have them.
5. Make this list available with the proceedings of your workshop.

Figure 3.1: Example of allies mapped on a Venn diagram



4

INTERACT WITH THE PROCESS

Outcome

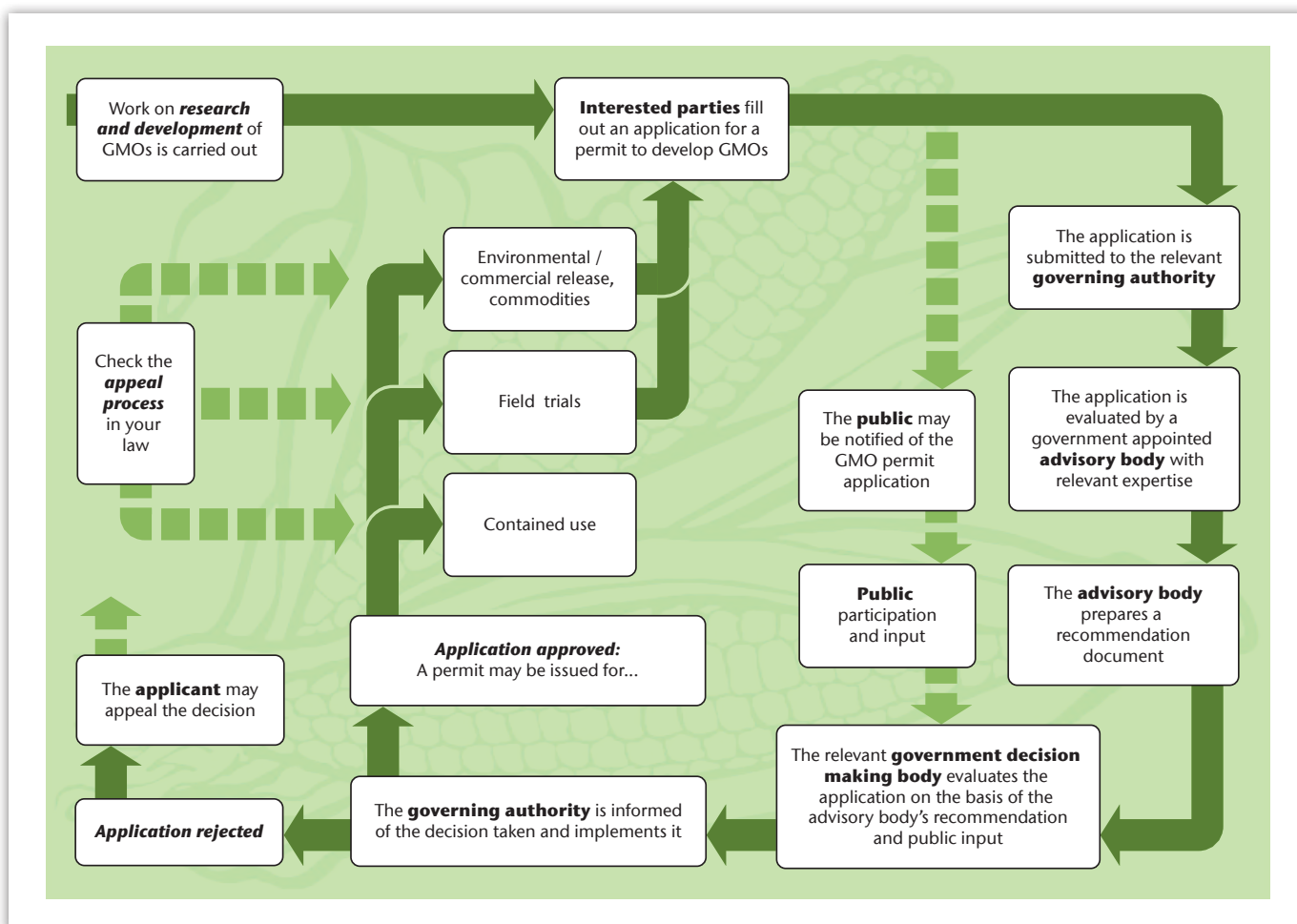
Conceptualise and plan how you will engage with government, GM producers and civil society when commenting on GM permits under consideration.



Figure 4.1 outlines a typical application process and means of engagement throughout. Remember that GMOs can take a decade or more to move from research and development through all the regulatory hoops and finally to commercialisation. This means that you should not give up if your initial objection is unsuccessful. Continue your research and lobbying and be prepared for each new step in the regulatory process. Use the time to consult widely with stakeholders and garner support. Apply pressure in the media. Do not forget that many varieties will have already found approval in other countries and information could be available on the Biosafety Clearing House, including who has already done objections and safety approvals.

The exercise in this section highlights the various aspects of planning and submitting an objection to a GMO permit. Completed country profiles are necessary for this exercise (a guide is available in Annexure 2) – please ask participants to come prepared with this information or make sure that you have a session earlier in your workshop to complete this task. Alternatively you, as facilitator, can research the answers and make these available.

Figure 4.1: Lifecycle of a GMO





Available on
Reading CD:
diagram of a GMO
lifecycle [file 4.1.1]



Available on
Reading CD: Potato
public notice
[file 4.1.2]

Exercise: *Planning a submission*

Time: Approximately 3 hours (1 hour for group work; 1 hour for presentations and questions; 45 minutes – 1 hour for plenary discussion).

Resources: Flipchart paper and pens or data projector for presentations by groups; diagram of a GMO lifecycle; completed country profiles; extra handouts as listed below under each group.

Exercise:

1. Break into three groups. Each group will contemplate a different phase of the application process and prepare a 5-minute presentation to plenary. Provide each group with the resources and instructions listed below.

2. GROUP WORK

Group 1—Notification of a new event and application for information

Handouts/resources: Country profile; potato public notice.

Task description:

The Cartagena Protocol obliges member Parties to engage citizens in decision-making on GMOs. The mechanism for this will vary from country to country. However, in order to participate, citizens must know that a decision is under consideration.

It is your task to work out how you, as an interest group, are going to get a foot in the door of the process. This may involve researching who is responsible for various administrative functions and developing relationships with the pertinent people. Prepare a 5-minute presentation to plenary, explaining –

- ◆ how you will know when GM applications are submitted to government;
- ◆ how you will access the information you need to engage in an informed manner; and
- ◆ who you need to develop relationships with.

Use the following to guide your discussions and presentation.

- a) Look at the public notice that you have been given; discuss any thoughts and questions that arise.
- b) Carefully consider the following –
 - ◆ How will you be notified of a new event such as the one in the notice? (This will be outlined in your country's biosafety legislation. If this is not in place, what other laws or bodies will regulate GM applications?)
 - ◆ What is the time-frame for comments on the application?
 - ◆ Who else needs to know about the permit (e.g. other interest groups or allies)?
 - ◆ What is the procedure for you to access information, and how long does it take to receive the information? (Name the authorities or relevant bodies and describe the procedure.)
 - ◆ Can you apply for an extension?

- ◆ What does the law say about confidential business information?
- ◆ Who is your biosafety focal point? Who is your competent authority? (This information can be found at www.cbd.int — look for the country profile button under the Information menu, on the top right of the page, and click onto your country. The information may be outdated, so it would be prudent to follow up and check.)
- ◆ Do you have any known allies or sympathisers in government that could assist you?

If you do not know the answers to some of these questions make an educated guess and note them as knowledge gaps that need to be filled in. Note also any difficulties that you foresee that may require further strategising. In your final planning you can mandate people to follow up and share the information.

Group 2—Analysis of a permit application and submission of comments

Handouts/resources: Country profile; sample page from potato dossier; executive summary of ACB's potato submission; Biosafety Assessment Tool (BAT) outline in Annexure 4.

Task description:

If you are fortunate enough to have been alerted to a new application for a GM permit, and you have been able to gain access to the safety dossier that has been submitted to authorities by the developer, you are in a position to make an informed comment.

Group 1 is looking at how to ensure that all the information you need to make a submission is at your disposal. Your task as a group is to ensure that you are prepared to engage the authorities in an informed and persuasive manner within the prescribed procedure. Prepare a 5-minute presentation on the steps you need to take and the people you need to contact to engage authorities successfully. Use the questions below as a guideline and include the answers to questions b) to d) in your group presentation.

- a) A summary of the ACB's key findings on an application for commercial release of GM potatoes is provided. These points were fleshed out in greater detail in the final submission (available on the Reading CD). Discuss in the group: how did the ACB back up their argument against the release of GM potato?
- b) Who can assist you in the analysis of a safety dossier and compiling a submission? You may have some expertise in-house and may also have to source outside expertise. Your organisation's expertise and experience is a crucial starting point. It is also good if you are able to provide an independent analysis of the scientific safety data as set out in the BAT Assessment (outlined in Annexure 4). List the expertise you feel you need to outsource as well as ideas of individuals, organisations and institutions that you could call on.
- c) Who else should be consulted about the permit that has been applied for? What other voices are important for authorities to hear? Name these.



Available on Reading CD: Sample from potato dossier [file 4.1.3]; ACB's potato submission [file 4.1.4]; letters from retailers and public [files 4.1.5, 4.1.6, 4.1.7, 4.1.8]



Available on
Reading CD:
ACB Press Release –
GM potato rejected
[file 4.1.9]

- d) Who do you need to submit your objection to? What obligations for public participation are prescribed in the law?

Please note what obstacles you foresee in this process and make suggestions on how to overcome them.

Group 3—Decision making and follow-up

Handouts/resources: Country profile; ACB Press release — GM potato rejected.

Task description:

Groups 1 and 2 are looking at accessing information on GMO permit applications, analysing that information, involving relevant groups and making an informed submission to the authorities. It is the task of your group to consider how you will ensure that you are informed when the authorities have taken a decision on the matter, and what steps you will need to take as a result of the decision.

- ◆ Read the press release that has been supplied. Discuss: why did the South African authorities reject this permit? What steps would you suggest the ACB take now that this decision has been made and the applicant will appeal?
- ◆ In your own country context, how will you be notified of any decisions that are made regarding permits that you have made submissions on?
- ◆ Select one person to be a talk show host and another to be a representative of an organisation that was concerned about the release of GM potatoes. Prepare a 1- or 2-minute interview (radio or television) to present to plenary on the potato story.

3. GROUP PRESENTATIONS

Allow 5-10 minutes after each presentation for questions of clarity.

4. PLENARY DISCUSSION

After all the presentations, hold a plenary discussion focusing on how to apply this process within your own country and addressing the following questions –

- ◆ What thoughts arise from the presentations?
- ◆ What information is missing that needs to be followed up or researched and shared?
- ◆ What obstacles do you foresee in this cycle? What suggestions are there to overcome these obstacles?

Facilitate the discussion using the guideline questions provided in Table 4.1.

TABLE 4.1: CHECKLIST OF INFORMATION NEEDED FOR THE SUBMISSION PROCESS

NOTIFICATION/ APPLY FOR INFORMATION	ACCESS INFORMATION	ANALYSIS	CONSULTATION & ENDORSEMENTS	DECISION MAKING	FOLLOW UP
How are you notified of a new event?	Which body governs permits?	Who will do the analysis of the risk assessment?	Who do you need to share your analysis with for endorsements?	How are you notified of decisions?	What obligations have been set out in the permit?
What information must be contained in the notice?	What is the procedure for you to access information?	Science, law, socio-economics, molecular and comparative analysis, food, animal feed and health safety issues, environmental issues	What time frames do you have for consultation?	Where can you access information on decisions made?	What is the next step in the process? (e.g. field trials, commercialisation) Is there further action you need to take?
Who else needs to know about the permit?	How long does it take to get information?	Which experts can you rely on?	When will you alert the media?	What rights to appeal do you have?	Documenting and sharing
What is the time frame for comments?	Can you apply for an extension?	Centres of origin, farmers varieties, local landscapes	Who do you need to submit your objection to?		
Which company/organisation is applying?	Confidential business information	Who is developing the product? Who is funding? Is there a patent?	What obligations for public participation are prescribed in the law?		
Who is your biosafety focal point?		What alternatives to the problem is the technology addressing?			
Who is responsible for administration of biosafety regulation?		What type of permit is being sought? (transboundary movement, contained use, field trial, commercial release)			
		Co-existence and Intellectual Property			
		Where else has this event been approved and what information already exists?			



5

KEEP THE PRESSURE ON

Outcome

Plan effective interaction with the media.



Once a GMO has been approved for commercialisation there may still be opportunities for post-release monitoring. There remains an opportunity to raise public awareness and build pressure. Remember that if the application is rejected there will likely be an appeal, and you will need to be ready to stay with the process.

In hindsight, it is easy to see how knowledge about GMOs has become mainstreamed. When you are in the thick of it, it is difficult to see the impact you are making. Documentation, media, public interaction and networking with social movements is hard work but pays off in the end.

Keeping in close contact with the media and using the media correctly is key in pressuring governments to be transparent. Use the time in your workshop to practice interacting with the media. This is nerve wracking for most people, and practicing in a safe environment with constructive criticism really helps. You need to learn to be concise and punchy. We do not often get feedback on how we present ourselves, so take a deep breath and take the criticism as it comes! If it is possible to do interviews on camera and play these back, hard as it is, it really helps.



Box 5.1:
Example of a press release

MEDIA RELEASE FROM THE AFRICAN CENTRE FOR BIOSAFETY

WATCHDOG REJECTS INDUSTRY'S HYPE OF GM SUCCESS IN SOUTH AFRICA

8 March 2010

On the 9th March 2010, at a press conference in Johannesburg, South Africa, the industry-sponsored International Service for the Acquisition of Agri-biotech Applications (ISAAA) will announce the “phenomenal success” of GM crops in South Africa based on a single-minded obsession with numbers: that South African farmers are growing 1.8 million ha of GM maize, soya and cotton.

The African Centre for Biosafety (ACB) has, in its briefing paper titled ‘From South Africa: ISAAA’s 2009 report is fundamentally flawed’, presented a more sobering picture, which includes crop failures in South Africa, the incapacity of South African biosafety regulators to ensure environmental and food safety, the spectacular rejection by the South African regulators of a commercial release application for GM potato and small-scale farmers’ abandonment of GM cotton.

The ACB also questions the veracity of the ISAAA’s figures, which the ACB argues are based on speculation. According to Haidee Swanby, of the ACB, “ISAAA has obtained its figures from FoodNCropBio, a private consultancy firm in South Africa, who has in turn compiled its figures by extrapolating from seed orders and the ‘intention to plant’ obtained from seed companies.”

The briefing points out that only 2.7% of global agricultural land is in fact planted to GM crops, with the majority being grown in the United States, Brazil and Argentina. Together, these three countries account for 79.6% of the GM crops grown globally in 2009. It also argues that only small “gains” were made in India, Canada, Argentina and South Africa; while China, Paraguay and Europe all recorded a drop in GM crop plantings, and Australia remained static.

According to Mariam Mayet, director of the ACB, “in reality, the numbers of hectares planted to GM are of less importance than questions about food security and sovereignty, equity and justice, and the livelihood of small scale farmers — real issues that industry obfuscates with its single minded fixation on percentages, hectares and industry profits.”

The ACB calls for a shift in global agricultural policy towards ecological farming practices and small-scale and local production for local consumption. “The promotion of genetically modified crops, which are resource hungry, capital intensive and protected by intellectual property rights, is the exact opposite approach to what is needed to solve global ecological and food crises, and should be rejected,” said Swanby.

ENDS

Contact

Haidee Swanby: 082 345 6789

Mariam Mayet: 079 876 5432

SOME TIPS FOR WRITING A PRESS RELEASE

- ◆ Identify three key points and restrict your message to these.
- ◆ Date your press release and give it a punchy title that will grab the attention of the media.
- ◆ The first sentence should capture the reader and say concisely what is happening, with the next couple of sentences expanding upon the lead issue. The first paragraph should sum up your press release; the following paragraphs can then explain the issue in more detail.
- ◆ Journalists will sometimes quote verbatim from your press release. Avoid using emotive language in the text — give concrete facts and keep it neutral. Use quotes from your organisation or affected parties to get your subjective viewpoint across. Try to answer: who, what, when, where, why, and how. Try to use no more than two quotes per press release. The quotes should try to encompass punchy sound bites.
- ◆ Use an upside down pyramid structure — your most important points must be made in the first paragraphs, down to the least important points in the last.
- ◆ Ensure you let journalists know where your press release ends by writing “ENDS”.
- ◆ Give your contacts and information about your organisation at the end and direct people to further resources if they are relevant and available. Add any notes to the editor.
- ◆ Once you are finished, write your headline. It should be bold, catchy and capture your major points. Try and use relevant words that will come up in an internet search if someone is searching about GMOs.

Exercises: *Lobbying and advocacy*

1. Have participants, individually or in pairs, write a press release on AGRA or WEMA. (See the above tips for writing a press release.) This can be done as an evening homework activity.

Distribute the press releases among the participants and ask them to read them and write their comments.

Stick all on a wall so that participants can find their respective press releases with the comments from their colleagues.

2. Set up 2- to 5-minute television interviews on WEMA. Get a volunteer to be the interviewer, another to represent an NGO and a third to represent WEMA. Hold at least 3 such interviews.

Allow the plenary to feedback on the messaging. What is your key point — can you say it in one sentence? Sometimes you only get 1 minute on the radio!

3. Have participants, in groups or as individuals, write a petition text on AGRA.





CONCLUSION

Africans have been key players in the global unfolding drama of genetically modified crops. Right from the start, there has been a recognition that Africans will be recipients of externally produced seeds and chemicals, not the developers of agricultural systems and related inputs — as the spin of the New Green Revolution for Africa implies. As such, the most stringent biosafety measures need to be put in place, and alternative, less risky models need to be identified and nurtured.

African leaders, small-scale farmers and civil society engaged in the development of the African Model Law on Biosafety to create these measures in the face of this nascent technology possibly bringing unimagined risks to society and environment. However, the political pressure to finally adopt these crops is mounting to breaking point. After a decade of resistance, GMOs are beginning to move across African boundaries and out of African laboratories and into the soil. The time for solidarity and action is upon us.

We sincerely hope that this handbook provides you with a rich source of information and ideas for exercises that will assist you in building capacity, solidarity and action against the influx of GMOs into the continent. The African Centre for Biosafety will continue its role in monitoring South African conditions as well as broader trends, policy, dynamics and players. We look forward to further work with you towards supporting agricultural systems that empower African farmers and truly create food sovereignty and security.





TERMINOLOGY USED

Advance informed agreement (AIA) procedure — under the Cartagena Protocol, the first trans-boundary movement of a GMO intended for general release is subject to the AIA procedure. This should give the country of import time to make an informed decision on whether or not to allow the import. This procedure consists of notification by the exporter, acknowledgment of receipt of notification by the Party of import, the decision procedure and opportunity for review of decisions.

Adventitious presence — also called co-mingling. The unavoidable contamination of non-GM seed with GM seed, which can occur for many reasons — for example, the use of the same machinery to process both streams. It is now agreed that this co-mingling will occur and governments have agreed to set “thresholds” of acceptable adventitious presence before a shipment or product is treated as genetically modified.

Agribusiness — developers and sellers of seed and associated agricultural chemicals to be used in industrial agricultural systems.

Agroecology — encompasses a host of agricultural models that work with nature in a self-sustaining manner and can include practices such as traditional agriculture, organics, biodynamics and permaculture. Agroecology is not simply a food production system, but is based on a philosophy of social and environmental justice.

Agrofuel — industrial monocrops grown for diesel and ethanol for petrol. Commonly known as biofuels, with the implication that they are ecologically sound.

Biosafety Clearing-House (BCH) — international website where all Parties to the Biosafety Protocol are required to post information on their biosafety frameworks, decisions regarding GMOs, and certain safety data related to those decisions. Notification of illegal or accidental movement of GMOs is also required.

Biotechnology — the use of living organisms in the development of products useful for humankind. This could include using yeast for fermentation or classical breeding for plants and animals. Genetic engineering is a modern biotechnology. Developers of GMOs tend to blur the distinction between biotechnology and GMOs to give the impression that we have been deploying the technology safely since the beginning of civilisation. However, the development of the Cartagena Protocol sets GMOs aside from other biotechnologies as a new and scientifically uncertain technology.

Climate ready crops — a new wave of crops being developed to cope with the predicted stresses of climate change, such as drought resistant, saline tolerant and nitrogen efficient crops. These crops do not address one of the great underlying causes of climate change — the industrial agricultural system, which clears forests for production, uses over 70% of the world’s water and produces over 30% of harmful greenhouse gases.

Commercial release — same as general or conditional general release, also referred to as ‘placing on the market’ of GMOs.

Commodity imports — bulk shipments of GMOs intended for food, feed and processing (FFP).

Conditional general release — commercial release of GM seed for sale to farmers for planting. Article 12 of the Biosafety Protocol provides for the revision of decisions on permits at any time if new scientific information comes to light.

Contained field trials — a curious term that has been used in a number of African biosafety frameworks to refer to field trials, giving the impression that their impact on the natural environment is contained or limited.

Contained use — experimentation in a laboratory, greenhouse or other secure facility where the GMO will have no contact with the natural environment.

- Field trials** — controlled planting of GM crops in the environment, for testing before application for permits for general release,
- First generation genetic engineering** — engineering for efficient crop management, such as pest resistance (Bt) and herbicide tolerance. These are the only GE crops to have made it to the market today. The promised second and third generation crops have proved difficult to engineer — these are crops with enhanced nutrition and crops for the development of pharmaceuticals, respectively.
- Food, feed and processing (FFP)** — seed not intended for planting (environmental release), but rather for direct use as food for humans or animals. (Commodity imports). GM seeds imported as FFPs are not subject to the Advance Informed Agreement (AIA) process under the Biosafety Protocol.
- Gene flow** — the movement of genetically modified traits into other crops or wild relatives — for example, through cross-pollination.
- General release** — commercial or environmental release or placing on the market. Seeds are available for farmers to buy and plant.
- Gene Giants** — the six major agribusiness corporations that almost exclusively control genetically modified seed and related chemicals — BASF, Monsanto, DuPont, Syngenta, Dow and Bayer.
- GMO** — genetically modified organism. Other terms include GE (genetic engineering), LMO (living modified organism), gene altered, genetically enhanced, climate ready.
- Harmonisation** — in this context, it is the concerted effort of the United States government — under the auspices of USAID, along with the biotech industry — to facilitate weak biosafety laws throughout Africa under the guise of “harmonisation” of biosafety policy. In essence, the aim is to remove trade barriers by doing away with case-by-case permits for GMOs in favour of regional once-off decision making.
- Hybrid seeds** — developed through classical breeding methods to respond to chemical inputs such as fertilizers. These are protected by plant breeders’ rights. There is no law against saving such seed after harvest, but it is not recommended, as they do not yield well season after season due to their narrow and uniform genetic base resulting from the breeding process. These are also known as F1 hybrid seeds.
- Industrial agriculture/Green Revolution** — a new model of agriculture developed in the 1950s, based on hybrid —and now also GMO — seeds grown in monocultures with the assistance of chemicals. Designed to feed global markets rather than supply local nutrition.
- Intellectual Property Rights (IPRs)** — rights bestowed on the developers of new ideas or technologies to give them exclusive rights to their products for stipulated period of times — including patents and breeders rights.
- LMO** — Living modified organism. This is the term used in the Biosafety Protocol to refer to what we usually call GMOs.
- Monocrops** — single crops grown over vast tracts of land that need inputs such as chemical fertilizers, pesticides and herbicides to yield. Usually grown from hybrid or GMO seed, but could also be found in large scale organic systems. This is in contrast to the intercropping and diverse cropping systems found in agro-ecological systems, which mimic nature.

National Biosafety Framework (NBF) — Parties to the Biosafety Protocol are obliged to develop national legislation to regulate the development, cultivation and handling of GMOs.

Non-target species — organisms that may be affected by a GMO but were not the original intended target. For example, Bt crops are engineered to control certain pests, such as stalk borer, but may affect useful predators in the process, thereby impacting negatively on the ecosystem.

Product and process based labelling — product based labelling is triggered when transgenic DNA can be found and tested for in the final product. Process based labelling follows the development of a product from source and is triggered if a transgenic technology has been employed at any stage, regardless of whether or not transgenic DNA remains in the final product.

Products of GMOs — include, for example, flour made from transgenic maize or soya, tomato sauce, and eggs from chickens fed with transgenic maize.

Resistance — there are already a number of studies that have shown that target pests have become resistant to Bt crops and are no longer controlled by the technology.

Risk assessment — desktop assessment of biosafety data to assess potential risks of a new GMO and necessary mitigating procedures. Decisions on whether or not to grant a permit for a new GMO event is based on the outcome of the risk assessment.

Stacked traits — crops that are engineered for more than one purpose, for example to deal with multiple pests or to be pest resistant and herbicide tolerant. As the number of foreign genes introduced into a crop increases, so too do the unpredictable outcomes and risks.

Substantial equivalence — many countries have adopted the American stance that GMOs are essentially the same as their conventional counterparts, on the basis of their similar chemical composition. This concept is highly contested, as changes at a genetic level are not taken into account and these would take much more sophisticated testing. It is important to note that the producers of GMOs contradict themselves — when it comes to safety testing they say their product is the same as its conventional counterpart, but when it comes to IPRs they claim the right to patents for their novel technology.

Threshold — the level of GM contamination that is allowed in a non-GM product or shipment. Different countries have set different thresholds, ranging from 0.9% to 5%. These thresholds are determined on a political rather than a scientific basis.

Transboundary movement — movement of GMOs across borders.

Transgene — a gene from an unrelated organism.

Transit — GMOs that are passing through a country's border destined for import in another country. GMOs in transit are not subject to the AIA procedure.

Vectors — usually bacteria or viruses that “smuggle” the desired gene into the organism being engineered.

Weediness — the possibility that a crop could become more invasive than its conventional counterpart, for example by transferring its genes to wild relatives.

Wild relatives — undomesticated plants that are related to commercial or traditional crops. There is a high possibility of gene flow between GM plants and these wild relatives that can impact negatively on biodiversity.



ANNEXES

Annexure 1

LIST OF READINGS AND RESOURCES ON THE CD

1 Know the field and articulate your position

1.2 Two paths to food security: The Green Revolution and Agroecology

- 1.2.1 *Unmasking the New Green Revolution in Africa: Motives, players and dynamics* — Elenita C. Daño
- 1.2.2 *Report submitted by the Special Rapporteur on the right to food, Olivier De Schutter, to the United Nations Human Rights Council*
- 1.2.3 *Biotechnology and sustainable development: Findings from the UN-led International Assessment of Agricultural Knowledge, Science and Technology for Development* — Pesticide Action Network

1.4 Drivers of GMOs into Africa

- 1.4.1 *Drivers of GMOs* — a PowerPoint presentation
- 1.4.2 *The new Green Revolution in Africa: Trojan horse for GMOs?* — Mariam Mayet, ACB
- 1.4.3 *Water Efficient Maize for Africa: pushing GMO crops onto Africa* — ACB
- 1.4.4 *The Gates Foundation and Cargill push soya onto Africa* — Haidee Swanby, ACB

1.5 Potential risks of GMOs

- 1.5.1 *Objections to the application made by the Council for Scientific and Industrial Research (CSIR) in respect of contained use of genetically modified sorghum to the National Department of Agriculture, South Africa* — ACB
- 1.5.2 *Objections to the application made by ARC – Institute for Industrial Crops in respect of an experimental trial release application for event TMS60444 (Cassava) to the National Department of Agriculture, South Africa* — ACB and GRAIN
- 1.5.3 *Tainting Africa's heritage: Wambugu, Gates Foundation and DuPont's GM sorghum project* — A briefing paper — ACB

2 Familiarise yourself with the regulatory issues

2.1 The Cartagena Protocol on Biosafety to the Convention on Biological Diversity

- 2.1.1 *Cartagena Protocol on Biosafety to the Convention on Biological Diversity — Text and annexes*
- 2.1.2 *A good neighbour? South Africa forcing GM maize onto African markets and policy makers* — ACB
- 2.1.3 *ACB letter to SA Minister of Agriculture on compliance with the Cartagena Protocol on Biosafety and Constitutional Court judgement regarding access to information concerning GMOs (June 2009)*
- 2.1.4 *ACB letter to SA Minister of Agriculture on compliance with the Cartagena Protocol on Biosafety to the Convention on Biological Diversity (July 2010)*
- 2.1.5 *ACB formal complaint to the Compliance Committee of the Cartagena Protocol on Biosafety on the noncompliance of the SA Government to this treaty*
- 2.1.6 *ACB petition calling for public support on compliance to the Biosafety Protocol*

- 2.1.7 Overview of all GMO permits granted in South Africa from 2003–2010
- 2.1.8 GMO permits granted in South Africa for 2009
- 2.1.9 *Bilateral biosafety bullies: How corporations use bilateral trade channels to weaken biotech regulations* — GRAIN and ACB
- 2.1.10 *Biosafety Protocol: Ten years on and lagging far behind* — Mariam Mayet, ACB
- 2.2 The African Model Law on Biosafety**
 - 2.2.1 *Draft Revised African Model Law on Biosafety — January 2008*
 - 2.2.2 *Why Africa should adopt the African Model Law on Safety in Biotechnology* — Mariam Mayet, ACB
- 2.3 Heads up on the Regional Economic Communities' proposed role in biosafety**
 - 2.3.1 *The Revised African Model Law on Biosafety and the African Biosafety Strategy* — Haidee Swanby, ACB
 - 2.3.2 *On-going concerns about harmonisation of biosafety regulations in Africa* — Haidee Swanby, ACB
 - 2.3.3 COMESA's draft policy statements and guidelines on GMOs
 - 2.3.4 *Comments on COMESA's draft policy on GMOs* — ACB
 - 2.3.5 *Regulation C/REG.../11/09 establishing a procedure for the review and authorisation of products of modern biotechnology within the ECOWAS*
 - 2.3.6 *Regulation C/REG.../11/09 on the establishment of the West African Biosafety Committee*
- 2.4 South Africa's biosafety policy environment**
 - 2.4.1 PowerPoint presentation
 - 2.4.2 *Overview of GMO regulatory regime in South Africa* — ACB
- 2.5 A decade of lobbying has resulted in a labelling regime**
 - 2.5.1 *Traceability, segregation and labelling of genetically modified products in South Africa: A position paper on the implementation of the Consumer Protection Act and mandatory labelling of GM food* — ACB
 - 2.5.2 *Call on South Africans to back mandatory labelling of GM food* — ACB fact sheet
 - 2.5.3 Press release on labelling from ACB and SAFeAGE
 - 2.5.4 ACB petition to consumers on labelling
 - 2.5.5 *Comments on regulations to the Consumer Protection Act related to labelling of genetically modified organisms: Regulation 9.1 for the purposes of Section 24(6)* — ACB
 - 2.5.6 *Public comments on Promotion of Access to Information Amendment Bill, 2011: Access to information in the context of genetically modified organisms* — ACB

4 Interact with the process

- 4.1.1 Diagram: Lifecycle of a GMO
- 4.1.2 Potato public notice
- 4.1.3 Sample from potato dossier
- 4.1.4 *Objections by African Centre for Biosafety iro application for general release of genetically modified potato made by the Agriculture Research Council (ARC)* — William Stafford, Haidee Swanby and Mariam Mayet
- 4.1.5 Fruit and Veg City's stance on genetically modified produce in SA
- 4.1.6 McDonalds' letter on GMO potatoes
- 4.1.7 CBAN's letter on the Canadian experience relating to Bt potatoes
- 4.1.8 Letter in *The Mercury* newspaper on GM potatoes
- 4.1.9 ACB press release on GM potato rejection

Annexure 2

COUNTRY PROFILE

Information on what is happening in your country with regards to GMOs and a clear strategy around expert assistance on related matters are important grounding for this work. Below is a list of questions that can guide you to develop a profile of your country.

- ◆ Is your country party to the Cartagena Protocol on Biosafety?
- ◆ Is your country active on the Biosafety Clearing House?
- ◆ What policy and legislation are in place or being developed that are relevant to GMOs in your country? (These could include agriculture, phytosanitary, health, trade, environment, consumer protection, administrative justice, energy, etc.) What is your analysis of these policies and laws?
- ◆ Who is the Biosafety Focal Point in your country?
- ◆ Who is responsible for administering and assessing GMO permits in your country?
- ◆ How must the public be notified of the intention for new GMO permits to be submitted to the relevant authority?
- ◆ What information are you allowed access to, and what is the procedure to gain access to that information?
- ◆ What individuals and institutions can assist you in legal and scientific matters regarding GMOs? List these.
- ◆ Are there facilities for testing GMOs in your country? Who are the contact people? If not in your country, where can you access facilities or tools (such as strip tests) to test GM products?
- ◆ Is your country importing maize or soya? From which countries? Is it GM?
- ◆ Does your country receive food aid? From where? What is your country's policy on GM food aid?
- ◆ Describe the agribusiness and seed industry in your country. Who are the major players?
- ◆ Are there any GM experiments in contained use or field trials taking place in your country?
- ◆ Have there been any commercial releases, or are any pending?

Annexure 3

SAMPLE OF A 2-DAY WORKSHOP ON SUBMITTING OBJECTIONS TO GMO PERMITS

DAY 1

Introductions and expectations

Group work: Global food security and two responses to it: the Green Revolution and Agroecology.
Outcome: Develop a critique on these models and articulate it concisely.

Lecture: Global status of GMOs and potential risks to health, environment and socio-economic well being. Questions and discussions.

Lunch

Group work: Sharing country-specific status of GMOs (participants will be required to come with information on the status of their domestic biosafety frameworks and the relevant authorities responsible for regulation). Questions and discussions.

Tea

Lecture: Overview of the Cartagena Protocol and examination of the South African GMO policy environment.

DAY 2

Recap

Lecture: Overview of the risk assessment process. By what criteria is an application assessed? Questions and discussions.

Group work: Bringing a GMO to the market from research and development to commercialisation. What can civil society do at each stage? What allies and partners will you need?

Tea

ACB experience in objecting to contained use, field trials and commercial applications.

Lunch

Group work: Developing a press release, and strategising a petition and other endorsements.

Tea

General discussion

Close

Annexure 4

BASIC SITEMAP OF THE BAT SITE — ASSESSMENT SECTION

Practical Assessment

Start

Chapter 2: Genome

- ◆ **Description of recombinant DNA (rDNA) before and after modification.** This section identifies and discusses hazard identification at the level of transgene creation and insertion/deletion including how to characterize potential harms.
- ◆ **Molecular characterization of the indel.** This section identifies and discusses hazard identification at the level of the genome, including how to find the locations and structures of indels, followed by a discussion on evaluating the stability of indels.

Chapter 3: Transcriptome, Proteome, and Metabolome

- ◆ **Description and characterization of changes to the transcriptome.** This section identifies and discusses hazard identification at the level of novel RNA molecules that may be present in GMOs and methods to test the transcriptome for potential to cause harm.
- ◆ **Description and characterization of changes to the proteome and metabolome.** This section identifies and discusses hazard identification at the level of novel protein molecules that may be present in GMOs and methods to test the proteome and metabolome for potential to cause harm.

Chapter 4: Human Health

- ◆ **Compositional Analysis.** This section reviews how to identify and apply compositional data as evidence of substantial equivalence.
- ◆ **Nutrition, Toxicity and Allergenicity.** This section reviews how to identify and apply data other than animal studies provided as evidence that the GMO is a food as safe and wholesome as conventional food.
- ◆ **Animal Studies.** This section reviews how to identify and apply data using animal studies as evidence that the GMO is a food as safe and wholesome as conventional food.

Chapters 5 + 6: Environment and Gene Flow

- ◆ **Baseline analysis.** This section reviews how to characterize the current ecosystem and society before a GMO is trialled or released.
- ◆ **Deviations from the baseline.** This section reviews how to identify and then assess intended, unintended and unanticipated changes to the ecosystem and society from the proposed trial or release of a GMO.



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