

INTELLECTUAL PROPERTY RIGHTS,  
GENETICALLY MODIFIED SEEDS  
AND FARMERS' FOOD  
SOVEREIGNTY: THE CASE STUDY  
OF SOUTH AFRICA

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'History has many records of crimes against humanity, which were also justified by dominant commercial interests and governments of the day... Today, patenting of life forms and the genetic engineering which it stimulates is being justified on the grounds that it will benefit society, especially the poor, by providing better and more food and medicine. But in fact, by monopolising the 'raw' biological materials, the development of other options is deliberately blocked. Farmers therefore, become totally dependent on the corporations for seeds.'

**Prof. Wangari Mathai (2004 Nobel Peace Prize)**

**Green Belt Movement Kenya**

<http://www.gmwatch.org/p1temp.asp?pid=37&page=1>

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## Abstract

This dissertation discusses the concepts of Food Security and Food Sovereignty and the introduction of biotechnology into the international agricultural sector. It specifically focuses on the effects of the introduction of Genetically Modified seeds and Intellectual Property Rights.

By discussing the effects of biotechnology and the concurrent implementation of neo-liberal market-oriented economic policies, this dissertation aims to highlight international Food Regime developments during the last half century. In South Africa, the case study, these developments have bifurcated the national agricultural sector and strengthened the relationship between Agricultural Trans National Corporations and subsequent governments. This has led to the promotion of large-scale commercial farmers in the formal market sector, at the expense of the food sovereignty of small-scale traditional farmers in the informal market sector.

A substantial portion of this discussion concerns the role and behaviour of the United States, as the dominant economic power post World War II. Strategic agricultural support given to individual nations during the Cold War, shaped the contemporary international Food Regime. In addition, the United States' Food Aid program (an attempt to resolve its overproduction) and its promotion of neo-liberal policies through supranational institutions have created an environment in which Agricultural Trans-national Corporations have emerged, consolidated and become increasingly influential. By embracing biotechnologies and lobbying governments to assist in their introduction and protection, these Agricultural Trans National Corporations have substantially altered the relationship between farmers and their crops.

This dissertation analyses the South African agricultural sector in the light of the international Food Regime, taking into account its domestic legacy. A legacy characterized by: Centuries of discriminatory policies; a close relationship between the governments of the United States and South Africa; neoliberal friendly economic policies; the adoption and promotion of biotechnologies; Intellectual Property Right

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legislation; and a heavily bifurcated agricultural sector in which small-scale traditional farmers are effectively losing their Food Sovereignty.

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I thank my parents, who help me to shape myself as I am.

I thank my husband, for his patience and my children, for their happiness.

I thank my supervisor, for making his my challenge.

I thank the editor, for his time and generosity.

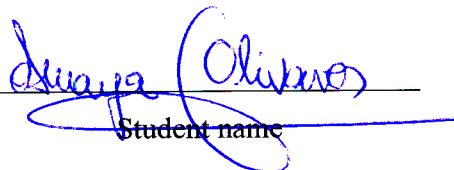
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## Declaration

Submitted in fulfilment / partial fulfilment of the requirements for the degree of  
MASTER, in the Graduate Programme in DEVELOPMENT STUDIES, University of  
KwaZulu-Natal,  
Durban, South Africa.

I declare that this dissertation is my own unaided work. All citations, references and borrowed ideas have been duly acknowledged. It is being submitted for the degree of MASTER IN DEVELOPMENT STUDIES in the Faculty of Humanities, Development and Social Science, University of KwaZulu-Natal, Durban, South Africa. None of the present work has been submitted previously for any degree or examination in any other University.

  
Student name



Date

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## List of Acronyms

ACB	African Centre for Biosafety
AML	African Model Law
ANC	African National Congress
AoA	Agreement on Agriculture
ARC	Agricultural Research Council
Bt	<i>Bacillus thuringiensis</i>
CBD	Convention on Biological Diversity
CPSI	Centre for Public Service Innovation – South Africa
CRG	Council for Responsible Genetics
DNA	Deoxyribonucleic acid
FAO	Food and Agricultural Organization
FRELIMO	Frente de Libertação de Moçambique (Liberation Front of Mozambique)
GAIN	Global Agriculture Information Network
GAS	Global Agricultural System
GATT	General Agreement on Tariffs and Trade
GE	Genetically Engineering
GM	Genetically Modified
GMO	Genetically Modified Organisms
GoSA	Government of South Africa
GURT	Genetic Use Restriction Technologies
HT	Herbicide Tolerance
IDRC	International Development Research Centre
IFI	International Financial Agencies
IFPRI	International Food Policy Research Institute
IMF	International Monetary Fund
IP	Intellectual Property
IPR	Intellectual Property Rights
IPS	Institute for Policy Studies
ISAAA	International Service for the Acquisition of Agri-Biotech Applications
IU	International Undertaking

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LRAD	Land Redistribution for Agricultural Development
MPLA	Movimento Popular de Libertação de Angola (Liberation Popular Movement of Angola)
NBS	National Biotechnology Strategy
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organization
OAU	Organization for African Unity
PBR	Plant Breeders' Rights
PVP	Plant Variety Protection
SA	South Africa
SACCAR	Southern Africa Centre for the Co-operation in Agriculture and Natural Resources
SADC	Southern Africa Development Community
SAGENE	South Africa Genetics Society
SANSOR	South African National Seed Organization
SPA	Structural Adjustment Programs
TNC	Trans National Corporations
TRIPs	Trade-Related Aspects of Intellectual Property Rights
US	United States
USAID	United States Agency for International Development
UN	United Nations
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environmental Programme
UPOV	International Union for the Protection of New Varieties of Plants
WB	World Bank
WC	Washington Consensus
WFC	World Food Conference
WFFS	World Forum of Food Sovereignty
WFS	World Food Summit
WTO	World Trade Organization
WWI	First World War
WWII	Second World War
ZAPU	Zimbabwe African People's Union

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## Chapter 1. Introduction

Nowadays, a complex and global system determines what, how and why we eat what we eat. Since the end of Second World War (WWII), an implicit system of rules relating to food production and trade has built up at international level. Since that period, a set of new actors (including trans-national corporations and supranational institutions) have appeared within the Global Agricultural System. Cold War rivalries, United States (US) agro-food policy (at national and international levels), the food crises of the seventies and the Washington Consensus (WC) measures have consolidated their economic and political power over the whole food chain, shaping the contemporary Food Regime.

Through decades, the agriculture in South Africa (SA) has undergone a process of industrialization and mechanization, during which science-based technologies (such as hybridization and biotechnology) have played a relevant role. While this has led to an increase in yield productivity per hectare, this increase has not occurred in the absence of abroad and arduous debate related to food security and sovereignty. The introduction of Genetically Modified (GM) seeds and their relationship to the concepts of Food Security and Food Sovereignty are elements of this complex debate that will be analysed in the body of this dissertation.

This dissertation will argue that there has been continuity in the liberal agricultural policies of both pre and post apartheid South African governments. It will further argue that these agricultural policies have supported the large-scale implementation of biotechnology and its related Intellectual Property Rights (IPR), while at the same time failing to secure the sovereignty of small-scale farmers.

The South African case has been chosen for two main reasons: first, it is one of the few African countries where the government actively partners and supports the application of biotechnology by the agricultural sector. Second, as an African country, there are a large number of small-scale farmers who rely on traditional agricultural practices to ensure their food security and sovereignty.

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## Chapter 2. Methodology

A methodology based on inductive reasoning has been used to build the argument of this dissertation. Specific information, related to the topic outline in the introduction, was gathered from both, primary and secondary sources. The primary and secondary data was captured, summarized, collated and analysed in order to lay down the base premises leading to a series of inductive generalizations related to the argument discussed in the introduction.

The dynamic nature and the lack of all-inclusive data related to the agricultural sector (i.e. large-scale and small-scale, formal and informal), as well as the interpersonal (therefore subjective) aspect of the collected research data makes an inductive approach more viable than any other approach.

### *Data sources and collection methodology*

Primary data sources for this dissertation include: formal semi-structured interviews with key informants and government documents related to the topic. Secondary data sources for this dissertation include general and specific relevant literature.

#### *Primary data*

In-depth semi-structured interviews were conducted with 'Key informants' selected using purposive sampling because of their insights into the debate on GM crops, IPR and Food Security/Food Sovereignty in general or specifically within the South African scenario. In the interest of a balanced argument, 'key informants' include individuals who are pro Genetically Modified Organisms (GMOs) and individuals who are critical of GMOs. Eight telephonic or direct interviews were conducted with the following individuals:

- Two researchers from the South African Sugarcane Research Institute
- Two professors from the Kwazulu-Natal University (School of Development Studies and School of Agricultural Sciences and Agribusiness)
- The marketing manager of the Pannar/Pioneer seeds company

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- The President of AfricaBio<sup>1</sup>
  - Two civil society activists. One who works with Earthlife Africa<sup>2</sup> – eThekweni branch and other who collaborates on the South African Freeze Alliance on Genetic Engineering<sup>3</sup>.

One more interview was conducted by email with one of the members of GRAIN's<sup>4</sup> board of directors.

None of the key informants has been specifically named along the dissertation due to the expressed wish of some of them to remain anonymous.

A public talk and discussion about the “health impacts of genetically modified food and what you can do about it” by an expert on food safety and biotechnology in the US, was attended at Durban.

Notebook and audio-tape recorded interviews were the primary data collection and recording methodology. All field notes and transcripts from audio-taped interviews were analysed in a textual format, by categorizing, indexing and the coding the texts. A sequence of interrelated steps was followed, namely; reading, coding, displaying, reducing and interpreting the texts. Once the text was coded, the information relevant to each category was collated and then reduced to its essential points. These points were then used to contribute to the substantiation of the argument put forward by this dissertation.

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<sup>1</sup> “AfricaBio is a non-political, non-profit biotechnology association for the safe, ethical and responsible research, development and application of biotechnology and its products. The Association also serves as a forum for informed dialogue on biotechnological issues in Africa” (AfricaBio webpage: <http://www.africabio.com/index.shtml>)

<sup>2</sup> “Earthlife Africa is a membership driven organization of environmental and social justice activists, founded to mobilize civil society around environmental issues in relation to people” (Earthlife Africa webpage: <http://www.earthlife-ct.org.za>)

<sup>3</sup> <http://www.safeage.org/>

<sup>4</sup> “GRAIN is an international non-governmental organization which promotes the sustainable management and use of agricultural biodiversity based on people’s control over genetic resources and local knowledge” (GRAIN webpage: <http://www.grain.org/front>)

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Review of government documents: Due to the difficulty of speaking to relevant policy makers, government documents, such as the Genetically Modified Organisms Act, the National Biotechnology Strategy or the Integrated Food Security Strategy were reviewed and analysed to evaluate the South African government's position on the issues relevant to this dissertation.

### *Secondary data*

Literature related to the Global Agricultural System, GMOs, IPR, Food Security and Food Sovereignty issues have been reviewed. The selected papers were chosen from those published in academic journals or from documents published by relevant organizations working on these topics, such as; the Food and Agricultural Organization of the United Nations (FAO), the United Nations Conference on Trade and Development (UNCTAD), the International Service for the Acquisition of Agri-Biotech Applications (ISAAA), the International Food Policy Research Institute (IFPRI) and so on. In addition, official web pages and documents published by international or South African Non Governmental Organizations (NGOs) such as GRAIN, AfricaBio or Biowatch South Africa were also reviewed. Finally, widely recognized books on these issues were also used to facilitate a broad overview of the issues relevant to the argument put forward in this dissertation.

Another published interview was used. It was conducted to a research coordinator of Biowatch South Africa<sup>5</sup> and the topic of this interview was: "GE<sup>6</sup> crops, trade liberalization and food sovereignty in Southern Africa".

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<sup>5</sup> "Biowatch South Africa was established in 1997 as a national non-governmental organization to publicize, monitor and research issues of genetic modification and promote biological diversity and sustainable livelihoods" (Biowatch South Africa webpage: <http://www.biowatch.org.za>)

<sup>6</sup> GE: Genetically Engineering

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## Chapter 3. The Global Agricultural System

### 3.1. Introduction

This dissertation seeks to answer the following two questions, namely:

1. How has the South Africa agricultural sector been shaped by changes to the international food regime? And,
2. How do Intellectual Property Rights and the development of Genetically Modified seeds impact on South African farmers' food security and food sovereignty?

In order to answer these questions, it is necessary to contextualize the relevant issues. The argument put forward by this dissertation will therefore provide a broad background of the international food regime, the biotechnology sector, the main technical, political and social changes that have happened within the last five decades and the main actors that have played a role in these issues.

This chapter has been divided as follows: Firstly, section 3.2 deals with the concepts of Food Security and Food Sovereignty. Over time, politicians, technicians, social movements and other groups have ascribed different meanings and nuances to these concepts. For this reason, it is necessary to provide a formal definition of these concepts.

Secondly, section 3.3 will outline the relevance to the global agriculture sector of international political changes that occurred after the WWII up and until the present. This outline will be linked to the technological changes within this period, such as the so-called Green Revolution and its social implications. The role of the US and its behaviour as the dominant economic power during the Cold War period and its dominant role as one of the promoters of the Washington Consensus measures will be highly relevant within this section. The creation of the World Trade Organization (WTO) by powerful nations and its role in the promotion of neo-liberal measures within the agricultural sector will be also analysed.

Thirdly, section 3.4 will examine how the third generation of biotechnologies have and are being applied to the global agricultural sector, the Gene Revolution, will be

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discussed, as will the rising trend toward Genetically Modified Crops. The role of relevant actors in the biotech sector, such as Trans-national Corporations (TNCs) will be also analysed in this section.

Fourthly, section 3.5 of this chapter will deal with differences between the formal and the informal seed industry. In addition a brief exposition of the most relevant international treaties related to IPR will be developed at the end of this chapter together with their main implications for the small-scale farmers' food sovereignty.

Finally, prior to the analyses of the case study, some conclusions of this international landscape will be pointed out.

### **3.2. Food Security and Food Sovereignty**

The concept of Food Security, has been in use since the beginning of the seventies, and was firmly established during the World Food Conference (WFC). That took place in Rome in 1974, held by the FAO. At the time, after a post WWII period of reconstruction and after the food crises of the early 70s, the WFC defined Food Security situation as “availability at all times of adequate world food supplies of basic foodstuffs to sustain a steady expansion of food consumption and to offset fluctuations in production and prices” (UN, 1974:6). Initially, it was defined at a global scale, but later it was divided into, at least, three main levels: national, household and individual level<sup>7</sup> (FAO, 2003:3).

Food Security is a dynamic term which has been redefined since its initial conceptualization it has been refined and expanded and at the time of the 1996 World Food Summit (WFS) was defined as:

“Food security, at the individual, household, national, regional and global levels [is achieved] when all people, at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life” (FAO, 2003:28).

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<sup>7</sup> Even though food security at an individual level is of the utmost importance it is out of the scope of this dissertation, which focuses on the concept as it pertains to the national and household level.



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Currently, this definition is the most widely accepted, despite the fact that in 2001, the FAO again extended the definition in a document entitled *'The State of Food Insecurity 2001'*, by adding a social dimension to the definition, "... all people at all times, have physical, economic and social access..." to achieve Food Security (FAO, 2003:28).

Despite these changes, an agreed definition already exists even though it is not as widely expanded as should be. In fact, during the interviews undertaken for this dissertation, it was noted that the key informants offered their own nuanced versions of the concept of Food Security, for example:

"The small scale farmers are just producing enough food for themselves"  
(Interview 5).

"A person is able to generate enough food on a sustainable basis to maintain himself and his family" (Interview 3).

"Having the resources and the access to food, but also being able to grow sufficient food or have sufficient food to feed the family" (Interview 7).

"Having sufficient access to nutritional food at all times" (Interview 4).

Some of the key informants base the definition on the individuals own production of enough food, while others introduce access as the key issue to secure food. Obviously, these definitions focus on the household level. With regard to Food Security a larger scale the following nuanced versions were offered:

"When a country is actually able to produce enough food for the people living here without having to import" (Interview 1).

"Then [*the beginning of the 80s*]<sup>8</sup> it [*Food Security*] was an advanced term which defended the capacity of people to produce their own food daily. It talked about that, because the food is a primary necessity, each country should produce it; otherwise the non-producer countries will become very vulnerable, dependents, as opposed to those food export-oriented countries... Over time, the concept was lowering its profile. Proponents of the market began to say that this point of view was inefficient; it would be better that each country will produce, according to

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<sup>8</sup> For the sake of clarity, text in italics has been added by the author.

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their comparative advantages, economically profitable foods, sell them and acquire dollars (or Euros) and buy what you internally needed to feed the people” (Interview 8).

While *abundance* (sufficient food) and *adequacy* (safe and nutritious food) are pillars of the definition of reference, *access* becomes the key issue in the international debate (Busch, 1997:241). As pointed out by one of the interviewees, “The issue around hunger is not necessarily about food quantity, it is about access to the food” (Interview 7). There are several examples<sup>9</sup> where food insecurity has occurred where food abundance was not a problem, but where people who suffered hunger and starvation had no access to food. Abundance can therefore coexist with scarcity, underlying the importance of access. Islam and Wanmali (2002:160) also highlight a number of controversial debates that occur as a result of the question, “What is the best way of ensuring that all people have full access to food?”

According to one of the key informants (Interview 8), while the concept of Food Security continued to be a central issue in the political discourses, Food Security situations around the world remain unresolved after decades. This history suggests that although rich in definition, the concept of Food Security may have been empty of content and political will.

This may explain how and why the concept of Food Security has more recently been supplemented with the concept of Food Sovereignty. As suggested by one of the key informants, taken into account that access to food became a Human Right (Islam and Wanmali, 2002:160), “Via Campesina [*an international farmers' movement*] developed the 'Food Sovereignty' [*term*]”, (Interview 8) to highlight who should control policies to ensure real food security. In 2001 in Havana, Via Campesina defined Food Sovereignty at the World Forum of Food Sovereignty (WFFS) as follows:

“We define Food Sovereignty as the peoples’ right to define their own policies and strategies for the sustainable production, distribution and consumption of food that guarantee the right to food for the entire population, on the basis of small and medium-sized production, respecting their own cultures and the diversity of peasant, fishing and indigenous forms of agricultural production, marketing and

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<sup>9</sup> Kenya and Tanzania (USAID, 1994); India (Patel, 2007)

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management of rural areas, in which women play a fundamental role” (Via Campesina, 2001).

If access is the cornerstone to Food Security, right to access is the same for Food Sovereignty. What is more, control along the food chain becomes fundamental, being identified by one of the key informants with the concept of Food Sovereignty as follows: “I would define it [*Food Sovereignty*] as local control. Control over your own markets, your own production. Local economies” (Paget-Clarke, 2002). Note the introduction of the “local” dimension, when people speak about an international phenomenon. As Patel (2005:82) highlights, the political control purpose of the Via Campesina appeal has two dimensions: local and international level (ibid:81). This means, as will be developed in the following sections, that there has been an internationalization of the food chain that has de-linked local production and local consumption, through powerful new agents such as the trans-national corporations. This globalization of the local economies implies an international dimension, however, to recover local control over local economies it is necessary taken into account local specificities. Control over local economies implies the duty of the national government to safeguard its sovereignty and reduce their nation vulnerability by protecting production diversity and ensuring access to basic food for its people, strengthening local production chains and ensuring access to necessary resources (water, land, seeds, etc.) (Interview 8). Getting ahead some of the key issues of the dissertation, as one of the key informants said: “The Government should enforce the citizens to have the control but we do not have that because we completely rely on international market and trade agreements” (Interview 7).

It would seem therefore that, “Food Sovereignty is a pre-condition for a genuine Food Security” (Interview 8), or putting it in other words, even with access to enough and adequate food (a theoretical situation of Food Security), without people's control (Food Sovereignty), there is no a genuine Food Security. It has been observed that the concept of Food Security is more commonly used and internationally accepted than that of Food Sovereignty, which has been relegated to ‘anti-system’ movements. What is also interesting to note is that the majority of key informants did not know what Food Sovereignty meant.

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However, despite different meanings and nuances given to the two concepts discussed above, what is broadly accepted is that food insecurity is a structural phenomenon that brings together a multi-dimensional conception of hunger (FAO, 2003:3). It is a phenomenon linked to a variety of cultural, geographical, political, economic and social issues. One of the main pillars of this dissertation is that because of the multi-causal condition of hunger, it is not possible to solve it by a technocratic top down approach, by simply applying technology. Conversely, there is a quite widely recognized technocratic vision that defends that hunger could be reduced by an increase in agricultural productivity. As will be argued in this dissertation, the roots of food insecurity are embedded in politics. It will be contended that if food insecurity is to be effectively dealt with political willingness the role of participants in this process will have to change. This dissertation will therefore examine the issue of food insecurity using the concept of Food Sovereignty as a lens.

### **3.3. The contemporary Food Regime**

Despite the relatively new institutionalization of the concepts of Food Security and Food Sovereignty, for millennia, different regions have grown, selected and exchanged their products in order to cover their necessities, to diversify their diet or to obtain materials and inputs necessary for their livelihoods. The improvement of agricultural products and their trade is not a recent development or a result of the globalization era. The establishment of a rule system of these agricultural activities (from the production to the consumption points through an exchanging or trading system) and the way these are organized determines a 'food regime'. The Food Regime concept has been defined by Friedmann (1993:30-31) as, "The rule-governed structure of production and consumption of food on a world scale", and it includes not just the production aspects but also the governance along the food chain, trade relations among different actors and power relationships between them. Looking back through history, it is possible to observe the increasingly changing pace that the Food Regime has undergone over the past five decades (Lang, 1999:170), since the post-WWII period.

The contemporary Food Regime has been shaped by technological, political, economical and social changes at international level, which will be analysed through the following sections.

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### 3.3.1 The Green Revolution and the Cold War

Even though traditional plant breeding activities are as old as agriculture itself, with Mendel's discovery of genetic rules in the nineteenth century, technological changes have dramatically transformed the course of the agriculture. Based on genetic heritage, plant breeders developed highly productive varieties (hybrid varieties<sup>10</sup>) which grow better than their progeny, thereby increasing yield productivity per hectare. Even though these improved varieties were developed in previous centuries, “the most dramatic increases in yield per hectare came after 1945” (Perkins, 1997:10). An explanation for this can be easily found: During the WWII, chemistry underwent massive development in order to deal with war objectives; however, with the end of the War, chemical companies had to look for another market. Because of the positive response that these varieties demonstrate to chemicals, the agrarian sector and specifically these hybrid varieties were one of their economic avenues of exploitation. To put it in other words, after WWII, hybrid varieties associated with a package of external inputs (such as irrigation, chemicals and machinery) resulted in a huge increase in yields. Note that machinery has been included as an external input because the industrialization process was considered the engine of economic growth of the agricultural sector. “Development' was synonymous with 'industrialization” (McMichael, 2000:21). Through modernization and industrialization theories applied to the agricultural sector, the post-WWII period was characterized by a huge increase in agricultural productivity, named by the Director of the United States Agency for International Development (USAID) in 1968 as ‘Green Revolution’ (Borlaug, 2002).

It is obvious that the Green Revolution meant a real revolution in terms of productivity; as Chapman (2002:157) points out, “In many countries in Asia and Latin America for the last quarter of the twentieth century, growth in food output exceeded growth in population”. However, as (Scoones, 2006:26) explains, “the rosy pictures of aggregate statistics do not apply everywhere for all people”. The Green Revolution also entailed a series of *technical effects*, such as land salinization or pest resistance to chemicals, as

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<sup>10</sup> Hybrid Varieties: highly productive varieties in relation to their progeny, obtained following the Mendelian heritage, are exceptionally uniform in their physical characteristics and exhibit a positive growth response to agrochemicals, irrigation and other external inputs.

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well as *social and economic effects*. As a 2003 FAO report makes clear, “A factor in modifying views of Food Security was the evidence that the technical successes of the Green Revolution did not automatically and rapidly lead to dramatic reductions in poverty and levels of malnutrition” (FAO, 2003:26).

One of the major social implications of the Green Revolution was that it contributed to the division of the agricultural system into two oppositional methods and furthered the polarization of rural society and its related economic structure. Using Chapman's (2002:157) words, “Socially the new technology proved divisive”. These two methods of agricultural systems are: a large scale, monoculture and mechanized method (promoted by the Green Revolution) and a traditional method (small-scale, diverse crops and non-mechanized). The forthcoming political support given to the Green Revolution by governments and international institutions made bigger and bigger the gap between these two methods of agriculture, squeezing small-scale farmers out of the market structures. As a result, small-scale farmers were economically and consequentially societally discriminated against.

At the same time that all these technological changes happened, the international political situation changed dramatically with the end of the WWII in 1945. The post war period ushered in a new period of rivalry between the capitalist system and the communist system. A period where concerns about global Food Security and political options, amongst other issues, shaped global agriculture: As “for the international community, concerns about the combination of overpopulation and food insecurity fed into Cold War fears about political instability” (Scoones, 2006:23), both blocks looked at other countries as places where human and natural resources as well as political alliances were essentials to obtain allies. The ascent of the US, model of the capitalist system, as the dominant economic power, allowed it to substantially influence international agro-food policies (Friedmann, 1993:32).

The already mentioned technological advances, together with the idea that, “Security of supply is best achieved by growing food at home”, during instability periods (Lang, 1999:172), led to the US government’s policy to protect its own domestic agricultural sector and to support local production (Friedmann, 1993:32), through import control, export subsidies and support for a Green Revolution styled approach to domestic

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agriculture (ibid:30). Using these aggressively protectionist style policies, the US was able to increase national production and generate domestic surpluses (ibid). However, as the globally dominant economic power, it was able to restrict similar policies in other countries (ibid:32) and to impose the forthcoming neo-liberal measures on the global agricultural sector. Already in 1948, the FAO was aware of the unbalanced food production situation around the world. While many countries faced food scarcity and undersupply, the US had an excess of food production with the possibility of a structural oversupply situation (FAO, 2000). This situation was seen by the US government as a great opportunity for the US agricultural structural surpluses (FAO, 2000). The Public Law 480 of 1954 established the US Food Aid program which would be used “to expand international trade, to develop and expand export markets for US agricultural commodities” (US Congress, 1954 in Zerbe, 2004:7). US foreign aid policy and import controls were key issues to the Food Regime. Aid allowed the US to turn surplus stocks into an opportunity to pursue strategic economic policies (Friedmann 1993:35). “Food aid or other forms of export subsidy, which once underpinned the Food Regime, came instead to express intense international conflicts” (ibid:32). This asymmetrical situation has remained unaltered for many decades, shaping a complex international agricultural system.

US international food policy tried to secure political allies in destroyed European countries and subsequently in developing countries, where financial and technical support in Latin America and African colonies was exchanged for political support (Brand, 2006; Scoones, 2006). This led to a situation where “The Green Revolution was supported by the US in developing nations as an ideological alternative to socialism” (Brand, 2006:74). This point is highly important to the debate for, at least, two main reasons: Firstly, because it shows that there were political reasons (not just Food Security or technological reasons) which led the expansion of the Green Revolution and secondly, because this behaviour forced a complete transformation of the international Food Regime.

Furthermore, in addition to an asymmetrical food supply, famines and gaps between national and international agro-food policies have characterized the post-WWII period. The development of new actors in the global agricultural sector is another main

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characteristic. A number of supranational institutions, trans-national corporations and social movements arose during this period.

A few years after the International Monetary Fund (IMF) and the World Bank (WB) were established (1944), as Robbins (2003) explains, many *developed* countries instituted the General Agreement on Tariffs and Trade (GATT). The GATT was established one year after the rejection by the US and Britain of the creation of The World Food Board Proposal, “which provided for global supply management and food aid” under the auspices of the United Nations system, through the FAO (Friedmann, 1993:33). This happened in 1948 during a round of negotiations related to international trade rules. The agreement was designed to provide an international forum that encouraged free trade between member states by regulating and reducing tariffs on traded goods and by providing a common mechanism for resolving trade disputes. It is important to note, however, that the GATT excluded, “at US insistence” (ibid), agriculture from its ban on import controls and export subsidies (ibid). Obviously, these could damage protectionist US national agricultural policies. These facts clearly show that international trade rules are led by and oriented toward powerful nations. Trying to redress the disequilibrium between developed and developing countries in relation to trading patterns, in 1961, the UN created a new body, the United Nations Conference on Trade and Development (UNCTAD).

At the same time that supranational organizations were created, freedom of capital and trade restrictions between the US and Europe facilitated the emergence of the agro-food corporations (Friedmann, 1993:33-34), which under the Fordist<sup>11</sup> system predominant on this period (Goodman and Watts, 1994:6) and based on the industrialization of the agriculture sector, were able to subordinate farmers' needs to their own profit (Friedmann, 1993:33-34). These TNCs were able to control the whole food chain, deciding where and what to produce and where and what to consume (Patel, 2007). TNCs managed the production, the transport and the manufacturing of products, obtaining the surplus of the manufactured commodities and feeding these back into their

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<sup>11</sup> Fordist is a system of manufacturing that involves mass-production and a model of social and economic relations characterized by the rise of the multinational corporation, monopoly pricing, collective union bargaining and welfare politics to manage demand, detailed divisions of labor, deskilling of workers, and repetitive tasks (Goodman and Watts, 1994:7).



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industrial and economic growth. This reinforced TNCs in order to lobby governments to secure their positions in the international trade market through the implementation of different strategies, for example, trade barriers or domestic support (Robbins, 2003:26).

Power and control over the food chain and distribution of benefit and risk are the main issues within the international food system (Tansey, 2008). In developing countries, foreign companies with external capital invested in commercial large-scale monocultures and export-oriented plantations. TNCs got control of the agricultural production, increasing their economic power, while the impoverished population had neither the knowledge nor skills to manage new technologies nor the capacity to invest in it (Robbins, 2003:28). Tropical export crops in Africa originated in the colonial framework, wherein colonial powers wanted to develop export crops (Daviron and Gibbon 2002:149) with the purpose of supplying their own markets, not however “from a Food Security standpoint” (FAO, 2000, box 11). The already mentioned bipolarization of the agricultural sector was replicated at international level and strengthened by TNCs control, further polarizing the agricultural sector, and undermining traditional small-scale production and local markets. This resulted in a loss of Food Sovereignty for those people globally who were reliant on traditional small-scale agriculture and the local markets for their livelihoods.

At the time these changes were occurring, these unbalanced and unfair situations were denounced by popular movements, farmers associations and civil society organizations that arose from this complex landscape. They launched the concept of Food Sovereignty as opposed to the concept of Food Security that had been demagogically used by economic power groups (Interview 8). Albeit that these incipient movements were, “not formally present at the negotiations” (Friedman, 1993:29-30), but they must be considered as another influential group, as Tansey (2008) explains:

“When consumers [*or social movements*] act as citizens... they may be able to shape the environment in which all the other actors operate through influencing the choice of government and the laws, rules and regulations governments put in place to balance the range of interest in society.”

However, and following his argument, in a globalized agro-food regime this social pressure becomes diluted:

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“When laws are developed and applied nationally there is greater chance that a range of people affected by changes can have a say in shaping such changes. This becomes more difficult as rule-making processes become more global, with rules being set by international intergovernmental organizations” (Tansey, 2008)

Again, the local and the global dimension of the Food Sovereignty concept appears here, claiming for a local and international struggle within this complex landscape, in which neoliberal measures were forced and reinforced in following years through the WC and supranational institutions such as the WTO.

### ***3.3.2 Washington Consensus measures and the WTO***

International tensions were undermining the agro-food system, and the subsequent events of the early 70s turned it drastically. Increases in oil prices and the devaluation of the US dollar, among other factors, created an unstable environment, where developing countries which relied on agricultural export revenues were the most damaged: Fertilizer prices were three or four fold more from one year to another; productivity decreased dramatically and therefore food supply (FAO, 2000).

The following decade, after the 70s oil crisis, was a period of recession both in Northern and Southern countries (FAO, 2000). “Profound disillusionment in the North with the record of state involvement in economic and social life led to a simplistic and rather naïve belief in ‘the magic of the market’ as the most efficient economic regulator” (Simon, 2002:86-87). The State was to some extent displaced by large trans-national corporate interests, and conversely to demonstrations in war periods about the State efficiency “to give high priority to public interests and to co-ordinate otherwise fissiparous tendencies within the food system” Lang (1999:169), power groups on behalf of the trans-national corporate interests were able to lobby for a modification in state functions. The reduction of state functions was motivated by the idea of high bureaucratic and expensive state intervention programs and the economic interest of different powers groups on that. As McMichael (2000:23) argues “The process whereby markets are reconstructing states is largely corporate driven”. According to Simon (2002:86-87), “This is the essence of neo-liberalism, an economic creed that seeks to deregulate markets as much as possible to promote ‘free’ trade”. The globalized era is a

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market-led period, where states do not disappear but no longer regulate the market (McMichael, 2000:23).

Globalism, the neo-liberal approach and global capitalism are different names for the same phenomenon. One of the approaches to this phenomenon could be described as Robinson does:

“Global capitalism is organized in a set of increasingly supra-national institutions. These institutions include: the trans-national corporations that own and manage the world’s resources and appropriate the wealth produced by humanity; the international financial agencies (IFIs, such as the International Monetary Fund and the World Bank) that impose the conditions necessary for global capital accumulation to take place; the states of the North, and their junior counterparts of the South, that create the global and the local political, administrative, and legal environment that allow the system to function” (Robinson, 1998:1).

The neo-liberal approach has been imposed around the world through the Washington Consensus measures. These measures were closely linked to IMF and WB loans to developing countries, as a way to re-direct their national policies and encourage them to become market-oriented. As the FAO (2000) explains in its *‘Half a Century of Food and Agriculture’* these measures, or conditionalities, were applied to and imposed on developing countries as a key determinant of whether or not they would qualify for loans from international banks. As an example of some of these conditionalities, it is possible to identify: cuts in public expenditure, privatization of state enterprise and natural resources, market deregulation, trade liberalization and securing legislated protection for property rights (especially Intellectual Property Rights). These conditionalities directly affected the agricultural sector in developing countries that accepted the WC measures. As a direct consequence, the price of domestic agricultural produce decreased. In addition, public agricultural extension programs and basic support for the most disadvantaged groups (mainly in rural areas) had their budgets withdrawn, chemical product prices increased and state supported co-operatives disappeared as did public commercialization bodies and programs.

This neo-liberal wave culminated in the establishment of the WTO in 1994. It was created during the Uruguay Round of GATT to design and provide agreed rules of trade

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and ostensibly to liberalize trading relationship between nations. “The key difference between the WTO and existing UN organizations ... is that the WTO has a binding dispute settlement mechanism backed by sanctions” (Tansey, 2008), leaving the former UNCTAD with a subordinate role and consigning many initiatives that tried to balance the global situation to a state of limbo. “When the WTO was set up, it brought agriculture fully under the trade regime for the first time” (Tansey, 2008), launching the Agreement on Agriculture (AoA) and the Trade-Related Aspects of Intellectual Property Rights (TRIPs). According to McMichael (2000:22) “the WTO became vehicle of reform of the system of international trade in foodstuffs”.

If one observes the way in which the WTO is institutionalized as the predominant body regulating the international trade of agro-food items, it is easy realise the unbalanced nature of the relationship between individual nation-states. There exists within the WTO a clear power differential between nation-states, corporate interests are a factor in trade negotiations and the resultant trade rules are unequal for the different nation-states (McMichael, 2000). As one of the interviewee said, “At the moment, the WTO basically pushes the agenda of the global corporations and the powerful countries in the North. It doesn't take civil society or the countries in the South into account” (Interview 6).

The changes described above have culminated in the contemporary Food Regime, characterized by the predominance of the neo-liberal approach (Lang, 1999:169). This Regime concentrates the economic and political power with the agrochemical companies (ibid; Tansey, 2008) and supranational organizations, such as the WTO and results in an unbalanced ‘interconnectedness’ between social, economic and political interests (Tansey, 1994). Despite international tensions between North and South around these interests, there is still an asymmetrical relationship between countries, related to national and international agro-food policies (Friedmann, 1993:30-31). Concurrently with the neo-liberal approach to agro-food trade has been an integral industrialization of agricultural processes, driven by science-based technologies established in the North (Sconnes, 2006:190). This has resulted in a condition, according to McMichael, where “Food [*has been*] removed from its direct link to local ecology and culture, and became an input in urban diets and industrial processing plants” (McMichael, 2000:21).

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“Far from being a cause for celebration, the new globalization of the food system raises considerable tensions and heralds an unprecedented scale of centralization, intensification, and concentration with direct effects on developing and marginalized economies” (Lang, 1999:171).

The contemporary Food Regime has seen the culmination of science-based technologies applied to the agriculture (in the form of genetic engineering) with a second Green Revolution, the so-called Gene Revolution<sup>12</sup>. Powerful agro-chemical companies, supported by neo-liberalism, have consolidated their international control over the whole food chain, through the already mentioned process of concentration, entailing a series of implications that will be analysed through following sections.

### **3.4. The Gene Revolution and the TNCs**

The neo-liberal industrialization process of the agro-food industry has become a vehicle for the expansion of the biotechnology. According to the second article of the Convention on Biological Diversity (CBD)<sup>13</sup>, the term 'Biotechnology' is defined as,

“Any technological application that uses biological systems, living organisms or derivatives thereof, to make or modify products or processes for specific use”.

Biotechnology is however, not a fundamentally recent invention. Looking back through history, through centuries, humans have learnt from Nature how to manage natural biological processes and apply these to the preparation of foodstuffs. An understanding of biological processes allowed humans to use bacteria and other living organisms to produce; foodstuffs such as beer and cheese; pesticides; poisons; and medicines. However, with the discovery of the structure of DNA and the ability to manipulate DNA and thereby the genetic code of an organism, a new era of the neo-liberal exploitation of agriculture through biotechnology had arrived.

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<sup>12</sup> The Gene Revolution, through the use of genetic engineering technologies, could be considered as the second relevant wave of agricultural development, after the Green Revolution, within the past four decades.

<sup>13</sup> <http://www.cbd.int/convention/convention.shtml>

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Corporations focusing on the economic potential of biotechnology saw the agricultural sector as one of their key markets. Genetic changes in plants, which naturally occurred and were carefully selected by farmers over generations, were replaced by a comparatively rapid procedure of genetic modification in a corporate laboratory. According to Ricarda (2001) “with the discovery and isolation of genes, along with the tools of genetic engineering, any gene can be transferred across to any species and endless possibilities of combinations have opened up”. The Gene Revolution had arrived and the biotechnology corporations saw it as the ideal way to profit from the agricultural sector.

There is a common idea that the Gene Revolution is a continuation of the Green Revolution, because both concepts are closely linked with science-led agriculture (Scoones, 2006:19). On one hand, it is true that there is a continuation. As Perkins explains in the first chapter of *‘Geopolitics and the Green Revolution’*, there is a positive relationship between higher yields, wealthy groups, research and the development of new higher yielding plant varieties (Perkins, 1997:11). It is suggested that increased production generates wealthy groups which can invest in further research leading to even greater plant yields, starting a new cycle again.

On the other hand however, there are, at least, two great differences between these two Revolutions. (Setting aside moral and safety concerns related to health and environmental issues). Firstly, as relates to plant breeding, the Green Revolution utilizes hybrid plants that are the crossbred progeny of characteristically similar and genetically related plant species. Whereas the Gene Revolution utilizes genetically altered plants that may contain inserted genes taken not only from unrelated species but also from unrelated kingdom (Ashton, 2006:95).

Secondly, as Scoones (2006) explains, the different role that key stakeholders play within both revolutions implies important economic and political differences that cannot be underestimated. The Green Revolution was heavily state-supported and state-promoted and led to the ascendancy of powerful TNCs (‘wealthy groups’ as suggested by Perkins (1997)). Whereas the Gene Revolution has been directly lobbied for and promoted by the TNCs. The process by which TNCs access wealth through the

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application of the Gene Revolution to agriculture, especially agriculture in the South is of particular relevance to the global society and this dissertation.

To support this fact, it is necessary to highlight two interconnected processes that have taken place: Firstly, there has been a *concentration process* where the Agrochemical Corporations have moved into the GM seed market, giving the largest TNCs unprecedented power (UNCTAD, 2006), and monopolizing not just the pesticides market but also the seed market (Bowring, 2003:111). Secondly, there has been a *process of vertical coordination*, from raw material production (GM seeds) and the provision of agricultural inputs (chemicals and fertiliser) to agro-food processing, marketing and consumption managed by TNC's (UNCTAD, 2006).

Not only has this concentration of financial capital enabled TNC's to lobby governments to promote and ease the introduction of their products (GM seeds and chemicals) into particular countries (Bowring, 2003), it has also enabled TNCs to force conditions and become price setters on both the vertical and horizontal structure of the food chain (Bowring, 2003). As Patel (2007:10) contends, "By virtue of its size, Nestlé [*as an example of TNC*] can dictate the terms of supply to its growers, millers, exporters and importers, and each is being squeezed dry".

Farmers, as a result, have become passive price and product takers in the agricultural process. They have been constrained to 'freely choose' from a range of items predetermined by TNCs. As explained by a representative of a big seed company, "We [*the seed company*] develop our *own* varieties and *we* test it on the farmers' farms" (Interview 5). "It is like a new model of car" explains another interviewee who clearly identifies agriculture with industry, "the farmers may plant what they want. What normally happens is a variety appears on the market and the farmers have to indicate them whether they are interested or not... When a new model appears people start talking about it, people start expressing interest" (Interview 3). Furthermore, a pre-determinate GM seed is sold in conjunction with its specific package of related chemicals both products are produced and sold by the same company (Interview 7).

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Despite 'freedom from hunger' being the general catchphrase of the biotechnology TNCs, wealthy farmers seem predominately to be their target group, due to the high purchase cost to the farmer of this technology:

“If a farmer wants to buy a GM seed then he will pay a premium to the company who develop it...The price is a problem because obviously you pay a premium to buy these seeds but if you look into the entire cycle of the production it is not a problem; no, because the yield is much better” (Interview 3).

This demonstrates how the TNCs control of the agro-food market effects farmers' ability to choose the seeds they would like to plant, thereby undermining their food sovereignty. As one key informant said, “There is a direct relationship between loss of Food Sovereignty and the existence or imposition of transgenic [*Genetic Modification*] in agriculture” (Interview 8). Despite this loss of sovereignty, commercialization of GM crops is increasing year by year as will be pointed out in the following section.

### **3.4.1 GM crops: 12 years of commercialization**

The aim of this section is to present a mental panorama of the international use and distribution of Biotechnology and the Gene Revolution. In order to do this, a discussion about the introduction of GM crops, and statistics related to them collated from secondary data sources will be presented. This will illustrate the use and spread of biotechnology throughout the agricultural sector during the last decade.

The process by which a GM crop transitions from a laboratory to the market place is both lengthy and staged, commencing with an experimental period, followed by confined field trials, then in field pre-commercial trials and finally commercial release. During each stage prior to commercial release, there is a closely monitored 'in house' evaluation process overseen by a governmental environmental agency. Despite this monitored process, ongoing public concerns related to the impact of GM crops on society, health and the environment have been voiced since GM crops were first introduced. As suggested by one of the interviewees, “GM crops in general, have been more solidly tested than any other food group in history. [*However*] one must be quite clear that there is never zero risk” (Interview 3). The implied risk being that the long term consequences of the introduction of GM crops, may only be discovered at some



point in the future after their widespread and irrevocable introduction into the food chain.

Although the official date of the first commercial release of a GM crop (the FLAVR SAVR™ tomato), was 1994 in the US (Nap et al, 2003:2); 1996 is seen as an index year in so far as it relates to the widespread introduction of commercialized GM crops (ibid). As can be seen in Figure 1 (below), the Global Area of GM crops has consistently increased since then.

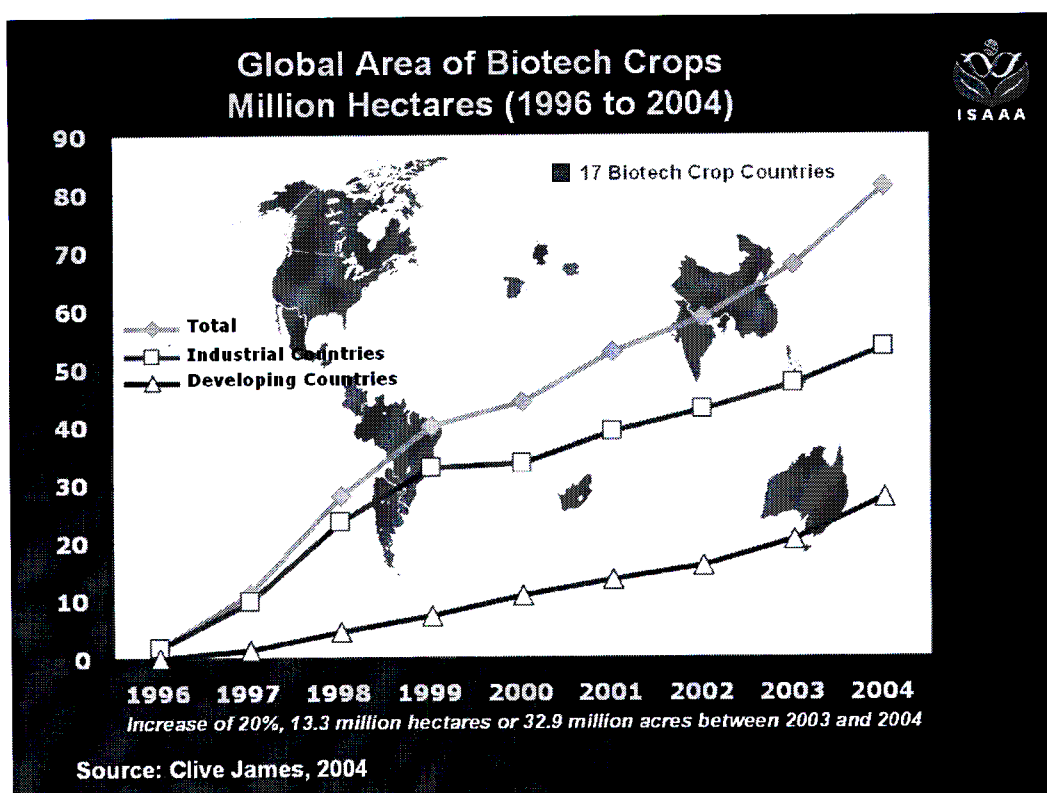


Figure 1: Global Area of Biotech Crops. Million Hectares (1996 – 2004).

Source: Clive, 2004

In addition, according to the International Service for the Acquisition of Agri-Biotech Applications' report (ISAAA, 2006), with regard to the spread of GM crops the cultivated area of global GM crops increased from 1,7 million hectares in 1996 to 90 million hectares in 2005 (a fifty fold increase in less than ten years). During this same period, the number of countries cultivating GM crops increased from six to twenty one,

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for example; Iran planted GM rice, the Czech Republic planted Bt<sup>14</sup> GM maize and both France and Portugal planted GM maize. In India alone the area planted with Bt GM cotton increased from 500 000 hectares in 2004, to 1,3 million hectares by 2005. The countries that as of 2006 cultivated more than 50 000 hectares of GM crops are: the US, Argentina, Brazil, Canada, China, Paraguay, India, SA, Uruguay, Australia, Mexico, Rumania, Philippines and Spain.

According to Clive (2004) between 1996 and 2004, the dominant genetic modifications to crops were herbicide tolerance (HT) and insect resistance (Bt). HT GM crops comprised 72% of the total area planted with GM crops, whereas Bt GM crops comprised only 19% of the total. The dominant GM crops cultivated globally by area and their corresponding trait combinations were: HT soybeans which accounted for 60% of the area and Bt maize which accounted for 14 % of the area. During this period the cultivation of both HT and Bt maize and cotton increased substantially.

According to the organisation 'Friends of the Earth International', in its recent publication entitled, '*Who benefits from GM crops?*' (Amendola et al, 2006) the above mentioned data may well be misleading. The report suggests that global ISAAA data on GM crops are inflated and misrepresent the reality on the ground. The report further queries this gross data by asking whether the global increase in GM crop cultivation implies a concurrent increase in economic profitability for small-scale farmers. The implicit suggestion is that this may well not be the case.

### **3.5. GM Seeds and Intellectual Property Rights**

This section of Chapter 3 will build on the preceding discussion on GM crops, but will focus predominately on IPRs relating to GM seed cultivation or production. Contrasting approaches to seed production will be described, in order to highlight the differences between formal and informal sector approaches and a brief exposition of the main treaties related to GM seeds and IPR will be presented.

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<sup>14</sup> *Bacillus thuringiensis* (Bt) is a soil bacterium responsible for the production of some toxins, commonly called Bt toxins, used to control insect pests and particularly caterpillars. Through biotechnology, toxin production is located inside the plant, causing the death of the pest when it eats the GM plant.

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### 3.5.1 *Formal and informal seed industry*

Where IPRs are concerned, it is important to highlight the contrasting systems for producing seeds in the agricultural sector. According to Zerbe (2001:659), the formal sector is characterized by; public (national and regional) institutions, private agricultural companies, large-scale commercial farmers and non-governmental organizations. As Mulvany (2005:69) points out, knowledge in the formal sector is, “Codified, recorded in writing and defended through national and international law”, hence intellectual property protection is secured through these structures. On the other hand the informal sector is characterised by, small-scale individual and community-based farmers who, at least in Africa, account for the bulk of seed production. According to Mulvany, knowledge in the informal sector is transmitted orally, “Built on trust and defended through the norms and practices of traditional institutions” (Mulvany, 2005:69), hence intellectual property protection is not secured through these structures.

According to Zerbe, in Africa, the informal sector accounts for more than 80% of total seed production, “Small-scale farmers rely heavily on informal seed networks, saving 60% to 70% of seed used on-farm, and acquiring 30% to 40% from relatives, neighbours and other community sources” (Zerbe, 2001:660). These informal seed networks are essential to small-scale farmers and central to the continuation of their food sovereignty. The formal sector is generally out of touch with the needs of small-scale farmers and the reality of farming in the informal sector and tends to overlook these (Zerbe, 2001; CPSI, 2007).

There are however, examples of formal sector resources directed toward small-scale farmers. Such as, “The SADC/SACCAR<sup>15</sup> research programme [*which*] recognises the central role of small farmers in improving agricultural production, and rightly focuses on crops important to small farmers but overlooked by the formal seed industry” (Zerbe, 2001:660); or the community-based seed production project in Limpopo Province (SA) where, “Researchers, together with farmers, developed sustainable mixed farming systems to improve economic returns while sustaining food production” (CPSI, 2007:2). Despite these efforts, the formal sector are largely committed to a Food Regime based

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<sup>15</sup> SADC/SACCAR: Southern African Development Community / Southern African Centre for Co-operation in Agricultural Research

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upon large-scale agricultural commercialization, characterized by the WTO endorsed Green and Gene Revolutions. As Brand explains, a socio-economic consequence of this type of Food Regime for the informal sector has been that, “Traditional [*informal sector*] production methods – reliant on seed saving – were progressively marginalized and displaced by high-yield species” (Brand, 2006:74).

As a result of this seed displacement, informal seed networks that are integral to the functioning of the traditional sector have been adversely affected. Small-scale farmers are therefore forced to access the formal sector for their seeds, in which protection to IPR plays a restrictive accessing role directly undermining farmers' food sovereignty.

### **3.5.2 Intellectual Property Rights**

A broad definition of IPR could be:

“*Intellectual Property* rights [*IPRs*] are legal and institutional devices to protect creations of the mind such as inventions, works of art and literature, and designs... Over the years, the rather elastic ... intellectual property concept has been stretched to include not only patents, copyrights, trademarks and industrial designs, but also trade secrets, plant breeder's rights, geographical indications and rights to layout designs of integrated circuits” (Dutfield, 2003 in Tansey, 2008).

Among these different ways to protect innovations, patents and plant breeder's rights are the most important in the seed industry (UNCTAD, 2006:16). However, because of the difficulty “in the recognition of plants as patentable subject matter” (ibid), plant breeder's right systems or Plant Variety Protection (PVP) systems were initially the best way to protect plant breeders' improvements (ibid). However, once the first patent of a living organism was granted in the US in 1980 (CRG, 2000), US patent law was subsequently modified to cover the living organism. As a result of this modification, thousands of applications have been submitted to obtain patent protection based on; biotechnology tools, a specific gene trait, a GM seed or an entire plant (UNCTAD, 2006:17).

Although plant breeders' rights are a kind of IP protection, they are significantly different from patents. In general, plant breeders' rights recognize a farmers' right to

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save and use seeds while also allowing for the free availability of genetic resources for research purposes. In contrast, patent law neither allows a farmer to freely use saved seeds nor to use this genetic material for research purposes (UNCTAD, 2006:17).

At an international level the most important institutional agreements related to IPRs, are: The International Union for the Protection of New Varieties of Plants or UPOV (Union Internationale pour la Protection des Obtentions Végétales); the International Undertaking on Plant Genetic Resources (IU); the Convention on Biological Diversity (CBD) and its Cartagena Protocol on Biosafety; the WTO's agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPs); and the African model legislation for the protection of the rights of local communities, farmers and breeders, and for the regulation of access to biological resources (African Model Law of the African Union). The history and scope of these institutional agreements will be more fully explored in the following paragraphs.

UPOV was established during the period of Fordism (Brand, 2006:75) at a 1961 Parisian convention, in an attempt to harmonize international systems of plant breeders' rights (Dutfield, 2008). It was instituted in 1968 and was the “first international treaty bringing IP into agriculture” (ibid). By June, 2007 the total number of UPOV member states numbered 64 (UPOV, 2007b). Dutfield details in *Turning Plant Varieties into Intellectual Property: The UPOV Convention* (2008), how the original convention was led by plant breeders with the clear intention of protecting their own interests. He further describes how plant breeders attempted to marginalise public interest groups, and currently continue to do so in 'auto-defence' of their 'property'. However, according to a 2007 UPOV publication, the mission of UPOV is, “To provide and promote an effective system of plant variety protection, with the aim of encouraging the development of new varieties of plants, for the benefit of society” (UPOV, 2007).

UPOV has been revised three times, in 1972, 1978 (entering into force in 1981) and 1991 (entering into force in 1998) (Dutfield, 2008). Although many changes were made

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between 1961 and 1991, *farmers' privilege*<sup>16</sup> has been most significant as far as relates to the scope of this dissertation. During the 1978 Revision, although there was no explicit mention of protecting the farmers' privileges, "All UPOV member countries implemented the exemption for 'private and non-commercial use' ... to include the re-sowing and in some cases the local exchange or sales of seed" (ibid). In contrast, the 1991 Revision is more restrictive, even though a recent UPOV publication emphasizes that in the 1991 Revision, "The authorization of the holder of a plant breeder's right is not required for the use of their variety for private and non-commercial purposes, for research purposes, nor for use in the breeding of further new varieties" (UPOV, 2007). However, the farmers' privilege was limited to the re-use of harvested seeds on the farmers' own holding (UNCTAD, 2006:17), "Excluding any type of exchange or sale of such seed" (Dutfield, 2008) and it was left to the individual member states to decide whether to uphold this privilege or not (ibid).

In 1983 The International Undertaking (IU) was adopted through resolution 8/83 during the 22<sup>nd</sup> session of the FAO Conference on Plant Genetic Resources in Rome. The aim was to harmonize (and balance) international tensions between plant breeders' and traditional farmers' around access to plant genetic resources<sup>17</sup>.

According to the text of the Resolution, the "Undertaking is based on the universally accepted principle that plant genetic resources are a heritage of mankind and consequently should be available without restriction" (FAO, 1983:2). The Resolution specifies in several articles (5, 7.1.a and 5, 7.2.) that genetic material, "Will be made available free of charge, on the basis of mutual exchange or on mutually agreed terms" (ibid:3 and 5). And, "For the benefit of the international community and on the principle of unrestricted exchange" (ibid:4). However, this resolution contradicted international IP protection and as a result, Northern countries (lobbied by commercial interest groups) did not accept the IU as a, "legally-binding convention" (GRAIN, 2001:1). The IU became bogged down by antagonistic positions and as a result turned out to be a compendium of good intentions and not much more.

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<sup>16</sup> Farmers' privilege is "the right of farmers to re-sow seed harvested from protected varieties for their own use" (Dutfield, 2008). "This right is subject to the non-use of the brand name of the protected variety, and in general does not extend to sale on a commercial scale" (UNCTAD, 2006:17)

<sup>17</sup> <http://www.fao.org/ag/cgrfa/IU.htm>

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Several negotiations have taken place since 1983 trying to resolve, among others, Farmers' Rights and the IU's harmonization with the forthcoming Convention on Biological Diversity. The adoption by the FAO in 2001 of the International Treaty on Plant Genetic Resources for Food and Agriculture was the culmination of these tense negotiations<sup>18</sup>.

The Convention on Biological Diversity (CBD) was established in 1992, at the Rio Earth Summit. It was negotiated under the auspices of the United Nations Environment Programme (UNEP) and nourished by international social, environmental and farmers' movements. In response to political, economic and social changes that had taken place since the 70s. The CBD was one of the three legally-binding Conventions that parties agreed to sign as evidence of their commitments to the aim of changing their development paths at the time (CBD, 2004).

Regarding the CBD, there are some important points to highlight: First, that

“the CBD reframed the status of genetic resources from a common heritage to ‘national sovereignty’, making them subject to wheeling and dealing on a bilateral basis. Genetic resources were thus reduced to a commodity to be bought and sold under the authority of individual governments” (GRAIN, 2001:1);

Second, “The article 15 of the CBD stipulates that the access to genetic resources where granted, shall be on mutually agreed terms... and subject to prior informed consent” (Plahe and Nyland, 2003:33); and third, under the auspices of the CBD, “The Cartagena Protocol on Biosafety [*became*] the first international treaty that entrenches and promotes the Precautionary Approach towards environmentally sound management and protection of the biological resources of Planet Earth” (CBD, 2004:1).

The WTO's TRIPs Agreement, sets out minimum standards for IPRs (including patents, copyrights and plant breeders' rights) for all WTO members. It came into force on 1 January 1995. In contrast with the CBD and the IU, the TRIPs Agreement “requires all WTO members to grant intellectual property rights on plant varieties (seeds)” (GRAIN, 2001:1-2). Thereby forbidding exchange, re-sow and formal or informal

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<sup>18</sup> <http://www.fao.org/ag/cgrfa/IU.htm>

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commercialization and threatening traditional seed sharing practices in rural areas of member countries (ibid). Furthermore, there are some terms within the Agreement, such as 'new', 'inventive step' or 'capable of industrial application' that are ambiguous, and hence adaptable to TNC's interest.

Following Plahe and Nyland's (2003) argument, there are points of controversy between the WTO's TRIPs Agreement and UNEP's CBD. For example, the TRIPs Agreement does not acknowledge the CBD's article 15 that, "Stipulates that the access to genetic resources where granted, shall be on mutually agreed terms... and subject to prior informed consent" (Plahe and Nyland, 2003:33). In addition the TRIPs Agreement does not account for traditional, communal or indigenous knowledge. The TRIP's Agreement is therefore highly controversial and many member countries have officially protested against it, including a number of African nations as well as India and Brazil.

In response to the various international institutional models regarding trade in plant material, in particular a plant's genetic material. The Organisation for African Unity (OAU) instituted 'The African Model Legislation for the Protection of the Rights of Local Communities, Farmers and Breeders and for the Regulation of Access to Biological Resources' (AML) in 2000, which article 26 gathers Farmers' Rights as follows:

- "1) Farmers' Rights shall, with due regard for gender equity, include the right to:
- a) the protection of their traditional knowledge relevant to plant and animal genetic resources;
  - b) obtain an equitable share of benefits arising from the use of plant and animal genetic resources;
  - c) participate in making decisions, including at the national level, on matters related to the conservation and sustainable use of plant and animal genetic resources;
  - d) save, use, exchange and sell farm-saved seed/propagating material of farmers' varieties;
  - e) use a new breeders' variety protected under this law to develop farmers' varieties, including material obtained from gene banks or plant genetic resource centres; and
  - f) collectively save, use, multiply and process farm-saved seed of protected varieties" (OAU, 2000:11).



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The positions taken by UPOV, the FAO's IU, UNEP's CBD (and its Cartagena Protocol on Biosafety), The WTO's TRIPs and the AU's AML provide a vivid portrait of the complexity and antagonism within the IPR debate (particularly where it concerns small-scale, traditional farmers in developing countries). In addition, with regard to the use of genetic manipulation of existing plant material, there is a 'permissive policy' stream, (represented by the US and the TRIPs Agreement) and a more 'preventive' one (guided by the Precautionary Approach outlined in the CBD). There are also evident contradictions between international institutional agreements. In addition, within individual agreements there are undefined terms which open the door to multiple interpretations. This complexity and antagonism are fertile grounds for bilateral and multilateral disputes. Furthermore, there are countries (mainly developing ones) that do not have IP laws and while this lack of regulation could be seen as an opportunity to protect national resources and farmers' rights in these countries, this has not typically occurred in past instances. Both national resources and farmers' rights are usually dominated by cross-cutting issues related to economic and political power interests when joining increasingly powerful institutions like the WTO.

A further controversial point in the IP debate, relates to the *indigenous knowledge* of medicinal and other traditional uses of plants. Indigenous communities have held this knowledge in public community trust for millennia. However, the introduction and enforcement of IPRs related to these uses, threatens to usurp this indigenous knowledge. This usurpation is generally termed 'bio-piracy', but the term bio-piracy can have different and opposite meanings, depending on one's point of view. For trans-national agri-business, bio-piracy is the violation of the patent rights conferred on their 'new' plant or plant material. For their opponents, bio-piracy is the patenting of life forms (Chataway et al, 2000:478). "The term bio-piracy was coined to describe the appropriation via IPR's of indigenous biological and knowledge resources from their indigenous habitat by multinational corporations" (Shiva, 2000 in Ismail and Fakir, 2004:177). On this matter however, according to the view of an interviewee from a trans-national agri-business, "I don't think anybody is using traditional knowledge to develop GM crops, a GM crop is not a traditional crop it is a new crop" (Interview 5).

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Within agribusiness, the main justification for IP protection is economic. As stated by a trans-national agri-business interviewee, “Monsanto spent million of dollars to develop [*these new varieties*] so they must recover the investment” (Interview 5). A more elaborated pro-IP argument relates to the commercial promotion of further varietal developments. The argument offered is that, “...If you don't protect IPR, [*agri-businesses like*] Monsanto will not invest to develop these new things and that is [*will not be*] advantage[ous] for the [*commercial*] farmers” (Interview 5). However, the following extract from an UNCTAD report unpacks this economic justification more fully by stating that:

“The integration of intellectual property rights into the international trading system could mean potential short and long-term benefits in terms of prospects for enhanced market access and a more conducive framework for foreign investment and transfer of technology ... However, it could also generate certain negative impacts, including price increases and restrictions on the diffusion of technology” (UNCTAD, 1997:1 in Zerbe, 2001:667)

Moreover, according to Bowring, “Intellectual property law has today become a serious constraint on productive research and the free exchange of ideas... creating an atmosphere of secrecy rather than open debate and reflective inquiry” (Bowring, 2003:116). In their analyses on this matter, Rangasamy and Blignaut suggest that there may be disparity between ‘policy intentions’ and ‘actual outcomes’ and that the introduction of a policy, legislation or right may not produce the desired effect (Rangasamy and Blignaut, 2005:367).

### **3.6. Conclusions**

In the preceding discussion in this chapter some relevant conclusions for the scope of this dissertation have been possible to identify, as follows:

Firstly, despite the frequent use of the term food security in policy documents, technical papers, and speeches and so on, it seems that theoretical definitions are neither inclusive of all the issues nor of all the voices. Furthermore, politicians, technicians or civil society activists apply this term indiscriminately at a household or national scale, thereby creating an environment for misunderstandings and demagogic messages.

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Different political options (for instance bottom-up vs. top-down) are available, to deal with food insecurity at a household or national level. It is recommended therefore that when used, the term should be clarified according to the scale to which it refers.

Secondly, the term food sovereignty is neither widely recognized nor widely utilized. Many of the key informants interviewed for this dissertation, who represent the knowledge base and expertise within the agro-food sector, were not conversant with this term. It is most widely used and understood by civil society activists, who propose that local control over local economies is, “A pre-condition for a genuine food security situation”, within a globalized economy (Interview 8). It is recommended therefore that the term food sovereignty be more widely adopted and accepted, in order to facilitate a transition toward a much needed democratization of the agri-food sector.

Thirdly, agricultural advances through the Green Revolution and Gene Revolution during the past five decades have hugely increased global agrarian productivity. Technologies used during both revolutions have proved to be economically segregationist, further polarizing farmers into large-scale and small-scale groupings. In contrast to large-scale farmers, small-scale farmers by virtue of their economies of scale are unable to access the internationally oriented agricultural market. As a consequence, small-scale farmers have and are being economically discriminated against, thus threatening their food security at a household level and undermining their food sovereignty.

Fourthly, the introduction and expansion of these agricultural technologies has been motivated by economics and politics, not by food security. The Green Revolution for example, was used as a strategic tool during the Cold War. It was, “Supported by the US [*financially and politically*] in developing nations as an ideological alternative to socialism” (Brand, 2006:74). However, when taking into account the fact that the roots of food insecurity are multi-causal, not only political willingness but also multi-sectoral action is required to resolve it. A purely technocratic approach to agrarian productivity yields only partially successful sectoral results, predominately for the large-scale producers. In addition, this technocratic approach provided perfect conditions for the growth of TNCs who were the major beneficiaries of the Green Revolution. As a result of their growth and subsequent economic interests, TNCs were able to lobby

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governments to facilitate the introduction and promotion of the Gene Revolution. The neo-liberal approach imposed by powerful nations, such as the US, smoothed the way to turn TNCs into major power groups within the agricultural sector. Through horizontal mergers and acquisitions and vertical coordination, TNCs have monopolized the agro-food value chain.

Fifthly, the creation of supranational institutions dominated by powerful nation states (such as the WTO) and their international agreements (such as the WTO's TRIPs) have consolidated the introduction of neo-liberal measures into the agricultural sector. These measures include amongst other things, the privatization of natural resources (such as water and genetic material), patents on living organisms and plant variety protection. These neo-liberal measures protect private commercial interests at the expense of the interests of the small-scale farmer and society in general.

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## Chapter 4. A bifurcated South African agricultural sector

### 4.1. Introduction

The previous Chapter 3 has characterized the main features and various actors that are part of the contemporary Food Regime globally. Also discussed, has been the international use of biotechnology and IPRs in the agricultural sector. Individual countries are however also subject to national events, which can cause their agricultural sectors to exhibit specific characteristics. Therefore, in keeping with the argument put forward in the introduction to this dissertation, Chapter 4 will focus on the South African agricultural sector, whilst emphasizing its relationship to the international agricultural sector. It will argue that national policies applied to the South African agricultural sector have paralleled those in the international agricultural sector. This argument will demonstrate that South Africa has been used as an economic and political strategic platform by the dominant post WWII economic power, the United States. As a result of this strategic interest, South Africa's governments have historically been supported both economically and politically by the United States. Based on the Hearn's argument (2000:817) that "political aid is *political*, that it is about consciously influencing the *rules of the game*" it will be argued how this relationship has continued to influence South Africa's recent national policies, by impregnating them with neo-liberal tendencies, both prior to the 1994 elections and subsequently. It will more specifically be argued that South African agricultural sector policies have been impregnated by these neo-liberal tendencies; and that this continual process has undermined the food sovereignty of the small-scale South African farmer.

This Chapter has been divided into three main sections: Firstly, a brief overview of the close relationship between the United States and South Africa governments will be offered to frame the political context in which SA has developed its policies. Secondly, focusing on the South African agricultural sector, issues that have been identified as relevant to this dissertation will be analysed, namely: Land distribution; the role of the state and agribusiness corporations; and the use of biotechnologies and IPRs in agriculture. Lastly, in light of the previous discussion regarding issues of Food Security and Food Sovereignty, a discussion related to these concepts and their relevance within the South African context will be presented.

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#### **4.2. Political context: US – SA relationship**

As a member of the broader British Empire, South Africa supported the Allied cause during both World Wars. Not just with relatively large quantities of troops and material resources, but also by offering a geographically strategic port between the Atlantic and Indian Oceans. At the outset of both wars there were however arduous domestic debates, between anti and pro-British factions within the governments of the day, before deciding South Africa's pro-allied position during the Wars (Byrnes, 1996). Subsequent to the Allied victories in both World Wars, South Africa benefited both economically and politically by having committed its human and material resources to the Allied cause. Furthermore, Post WWII, according to Easum, "South Africa's credentials as a Cold War ally were impressive" (Easum, 1975:68). As a result, the South African - Anglo American relationship was further strengthened. More specifically, it ensured a favourable relationship with the dominant post WWII economic power, the United States.

Although previously having been dominated by political parties with distinctly British interests, after the landmark 1948 South African elections (in which only whites and coloured could vote), the Afrikaner-dominated National Party (NP) came to power. The National Party set about ensuring the political and economic dominance of the Afrikaner people. The NP also institutionalized racial segregation as their predominant social and economic domestic policy (commonly referred to as 'Apartheid') (Easum, 1975:66) and continued to do so until the latter part of the 1980s. Despite Anglo-American recognition as a Cold War ally, South Africa's Apartheid policies were very controversial and, as Easum argues, became "The major conditioner of the US' political interest" (ibid:67). However, during the bulk of this period of South African governance (monopolized by the National Party), successive US governmental administrations essentially closed their eyes to Apartheid and maintained a preferential relationship with SA. In the following paragraphs, the mutual interest in this preferential relationship between the US - SA will be explained.

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## US interest on SA

As Easum (1975) develops in his paper, '*United States policy toward South Africa*', the US was predominately interested in SA for political and economic reasons, amongst others.

Internationally, as discussed above, the post WWII, NP dominated SA government, was considered a consistent political ally and "Described as 'a reliable, if junior, member of the Northern club'" (Hearn, 2000:821). Domestically however, the NP had an active opponent to its discriminatory policies in the form of the Marxist oriented African National Congress (ANC)<sup>19</sup>, who were viewed by successive US governments, "Through a cold-war lens, constantly referring to its members as terrorists and communists" (IPS, 1997:1). During the ideological conflict between communism and capitalism that characterized the Cold War period and as a result of colonial oppression, the Southern African region became a fertile bed for the foundation of many Marxist-oriented liberation movements (such as the FRELIMO<sup>20</sup> in Mozambique (1962), the MPLA<sup>21</sup> in Angola (1961) or the ZAPU<sup>22</sup> – Zimbabwe (1961)). The United States saw South Africa and its pro-capitalist (albeit racially segregationist) government, as a regionally strategic ally to counter the threat of communism in Southern Africa (IPS, 1997). This US support continued throughout the 1970s and into the 1980s, even as the Mozambican, Angolan and Zimbabwean liberation movements obtained their countries' independence from their former colonial rulers. These liberation movements subsequently began governing their countries through various forms of socialism and to support the ANC in South Africa. Thus, according to the IPS, creating, "Strong bonds of solidarity between the liberation movements" (IPS, 1997:1). As a result of this solidarity, perceived as threatening to regional democracy and capitalism, the South African government took drastic action. "In turn, [*these countries*] became victim[s] of South African destabilization, ranging from invasion and full-scale war to significant support for 'contra' activities. Far from opposing these aggressions, the US gave South Africa a green light" (ibid).

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<sup>19</sup> South Africa's liberation movement, founded in 1923, to champion the rights of the black population

<sup>20</sup> Frente de Libertação de Moçambique (Liberation Front of Mozambique)

<sup>21</sup> Movimento Popular de Libertação de Angola (Liberation Popular Movement of Angola)

<sup>22</sup> Zimbabwe African People's Union

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Taking into account the strategic position of South Africa, with regard to the control and security of commercial trade and economic links between the Atlantic and the Indian Ocean, US-friendly control of South Africa's airports and harbours has been essential (Easum, 1975:68). This strategic control has both secured trade routes and insured regional investment, which has been relevant to the functioning of the capitalist based US economy (Easum, 1975; Hearn, 2000). Furthermore, with regard to South Africa's own abundant natural resources, by the nineteen seventies, the balance of trade between SA and the US was more than half a billion dollars in the US' favour (ibid). During this same period, more than three hundred American companies were established in SA, with a direct investment of over one billion dollars, "The largest amount in any African country south of the Sahara with the possible exception of Nigeria" (ibid:67). As the Institute for Policy Studies (IPS) points out, "In the 1970s South Africa had absorbed about 50 percent of US direct investment in Africa as a whole, excluding oil investments. By 1982, US investment in South Africa amounted to \$14 billion" (IPS, 1997:1). According to Easum, "The most important [*American companies based in SA*] include[d] banks, pharmaceutical manufacturers, automobile manufacturers, and extractive industries" (Easum, 1975:67).

### **US support**

Due to the levels of US economic investment described above, the US government continued to play a supportive role toward South Africa's NP government, despite denouncing their discriminatory racial policies. Furthermore, on several occasions, the US government exercised their Security Council veto to prevent, economic sanctions being imposed against SA (IPS, 1997:1; Easum, 1975:69), thus demonstrating that South Africa's NP government enjoyed a preferential position with the US government of the day.

However, as Hearn (2000:821) suggests, in the 1980s, domestic instability due to growing political support for the ANC began to threaten South Africa's economic security. As a result, "Capital outside South Africa began to push its South African counterparts to search for a political solution that would involve a transition from racial to non-racial capitalism" (Hearn, 2000:821). Despite this push, the NP government stubbornly refused to change its racially based policies, even while loosing the economic battle against the increasingly powerful, ANC aligned trade unions. As a



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result, the US government changed tack and shifted their policy objectives in the mid - 1980s. But only after US government officials met with representatives of the ANC in 1985 (IPS, 1997:1). Subsequently, economic sanctions were supported by the US government and imposed on SA in 1986 (ibid).

It is clear that at the time, the US government was more interested in maintaining political stability in SA, than supporting the increasingly unsustainable racial policies of the NP government. To this end, the US government continued to provide grants and loans to South African civil society and to follow a policy of rapprochement toward the ANC, to facilitate peaceful and democratic political change (ibid). However, according to the IPS, behind this, “Anti-apartheid [*and*] pro-democracy rhetoric, another agenda was discernible: the desire to affect the direction of ANC economic policies” (ibid:2). Furthermore, the US provided, “Training and information to the ANC... on various aspects of free market economics” (ibid). As a result of this continued involvement, “By 1994, the year of the [*first*] democratic elections [*in SA*], the US had become SA’s largest bilateral donor of political aid” (ibid). Thus insuring that the US could continue to have access to those in political power in order to influence and shape SA policies in which, “US priorities [*could*] determine direction” (ibid).

As a result of this US involvement and despite their socialist roots, the new ANC government of SA began to embrace a strongly capitalist free market and neo-liberal economic system. Consequently, the ANC’s primary socialist agenda of reforming the unbalanced socio-economic conditions of the majority of the population was relegated (Hearn, 2000:825). And the economic sectors relevant to the US and other large international interests, which potentially faced regulation and nationalization, were left untouched under the ANC’s new policy of free market liberalization (Hearn, 2000:820).

Of particular interest to this dissertation, is SA’s agricultural economic sector, which has during the last few decades (along with the global economy) been shaped in accordance with US economic and political interests. Developments within SA’s agricultural sector have effectively mirrored the international changes that occurred in the Global Agricultural System (GAS) described in Chapter 3 above. Thus, despite a seemingly radical change in political control of the country, SA’s agricultural sector has experienced economic and procedural continuity. As discussed in Chapter 3 above, as

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with many countries globally, dominant international institutions have ensured that domestic policies relating to SA's agricultural sector have been supportive of Agribusiness, Trans-National Corporations and the neo-liberal agenda.

### **4.3. The South African agricultural sector**

The following section will highlight and discuss relevant features of South Africa's agricultural sector and discuss the links between these, the international agricultural sector and US political and economic interests. The lasting impacts that the apartheid regime has had on SA's agricultural sector will also be taken into account. A discussion on these features, their links and impacts will broadly proceed as follows.

The distribution of land since the first white settlements in South Africa has remained an unbalanced legacy to date. In addition, the procedural role played by the various SA governments, in the land distribution (and more recently) redistribution processes, has given shape to the agricultural sectors bipolar structure. This bipolar structure is currently characterized by: Wealthy large-scale farmers with large private land holdings at one extreme; and poverty stricken small-scale subsistence farmers without title on communal land at the other.

This bipolarization has further been strengthened by international tendencies toward technological innovation, industrialization and mass production within the agricultural sector, fuelled by the neo-liberal free market approach. As has happened at an international level, Trans National agro-food corporations have been the major beneficiaries of this neo-liberal process. In SA, these beneficiaries were championed by American corporations, such as Monsanto, who has a strong and very influential presence within the South African agricultural sector.

The application of biotechnologies to the agricultural sector by these corporations and the protection of their intellectual property rights have largely been promoted by the South African government. This protection has spanned both the pre- and post-apartheid periods and has enabled South Africa to become Africa's biotechnology leader. The use and protection of biotechnologies in South Africa has implications for Food Security and Food Sovereignty and a discussion on these concepts will close this section.

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#### ***4.3.1 The distribution of the land and the role of the State***

According to Delius (1997) quoted in Cousins (2003:58), prior to colonisation, indigenous land tenure in Southern Africa was usually secured through tribal membership and relationships of patriarchal social hierarchy. A land market as such did not exist, because tribal households were guaranteed access to land in order to provide for household sustenance. According to Cross, “Universal access to land” and “access to the factors of subsistence” (Cross (1992) in Cousins (2003:59)) were pillars of the tribal food security strategy.

Bernstein (1996) suggests that when the Dutch East India Company first began to use the Cape of Good Hope as a refreshment station in 1652 (for its ships on the trade route between Europe and Asia), the roots of the current South African agricultural sector were established. Bernstein (1996) further posits that the early modern agricultural sector was established by European colonists as an export oriented venture, based on wine, cattle and wheat. And that both the indigenous people of the region and their land were seen as exploitable resources. To this end, formal and informal structures of white colonial supremacy were imposed on the indigenous people of South Africa. With regard to the late nineteenth and early twentieth century, after the last Anglo-Boer war, Bernstein (1996) concludes that an ‘historic compromise’ was achieved between British and Afrikaners at the expense of the indigenous people of South Africa. This compromise led to an increased resumption of natural resource extraction and large-scale agriculture. These activities further internally displaced the indigenous people, dispossessing them of their lands and shaping a migrant pattern the remnants of which can still currently be observed in South Africa.

It is widely acknowledged that the early European settlers did not recognize indigenous systems of traditional land tenure in South Africa. As their numbers grew, they continually expropriated land from the indigenous people. Where necessary they used force and a European styled system of legal sanctions, to expand their landholdings and maintain ownership of the land. Indigenous people were as a result forced from their tribal lands and continually had to adjust their livelihoods (Cousins, 2003:57). As the modern agricultural sector, grew more influential in the South African economy, traditional systems of land tenure were seen as an obstacle to large-scale white agro-

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capitalism (ibid). As a result The 1913 Land Act was promulgated, by the then white dominated government. The Land Act effectively legislated 92% of South Africa for exclusive white control and systems of land tenure versus 8% for tribal settlement and systems of land tenure (Bernstein, 1996:5). This led to an overcrowded pattern of tribal settlement in the 'natives reserve areas', where "nearly three fourths of the [*South Africa's*] total population" were forced to live (Easum, 1975:66). This population relied heavily on subsistence agriculture to supplement and secure their household livelihoods. Overcrowding and traditional farming practices (in what were essentially agriculturally marginal areas that whites did not want) rapidly led to soil erosion, desertification and food shortages. In order to alleviate this situation, the Natives Land and Trust Act was promulgated in 1936, to increase the native reserve areas from 8% to 13% (Bernstein, 1996:7). This minor concession did not however resolve the issues of soil deterioration, the loss of livelihoods and food insecurity experienced by the native population of the reserve areas.

These unbalanced patterns of land distribution were mirrored by similarly unbalanced levels of state support for white large-scale agro-capitalism (Schirmer, 2000). As a result of state supported growth, the white predominately Afrikaner dominated, agricultural sector became a politically powerful voting block. These farmers were to contribute in large part to the National Party's 1948 election victory (Bernstein, 1996:9).

During South Africa's Apartheid period championed by the NP, the land, society and the economy saw an increase in the level of state involvement and support on a racially segregationist basis (Bernstein, 1996:10). For example, subsidies for large-scale white farmers were strengthened, even though during WWII there had been a call for a reduction in the discriminatory support given to this sector by the state. The NP government was highly protectionist of the economy and increased state spending to much greater levels than former governments. However, much of this spending was not implemented efficiently throughout all sectors of the economy. From the 1950s to the 1980s, the NP government effectively spent billions of Rand to ensure the pre-eminency of large-scale white farmers within the agricultural sector. As De Klerk (1993:372) in Schirmer (2000:407) shows, "Direct state aid to farmers in its various forms ... amounted to more than R2.7 billion [*just*] between 1981 and 1987". According to

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Schirmer, this state aid should not be seen as a hand-out however. He suggests that the state merely, “Provide[d] farmers with sufficient support to maintain a positive outlook despite facing extremely difficult natural and economic circumstances while at the same time pushing farmers to become more competitive and less dependent on the state” (Schirmer, 2000:406).

There were however, at least two direct consequences of this skewed state support to the South African agricultural sector. Firstly, the agricultural sector was increasingly polarized into a small minority of white landowners of large-scale commercial farms, on infrastructurally supported choice land, subsidised by the Government, at one end of the spectrum; and at the other end, a large majority of black, small-scale subsistence farmers, relegated to overcrowded tribally tenured reserve areas, “Of marginal economic value, without significant resources or infrastructure” (Easum, 1975:66). Agriculturally unsustainable lands and poor living conditions in these reserve areas, together with WWII demands, driving the industrialization process in the cities and the growth of large-scale white owned farms, led to a rapid and dramatically large depopulation of the tribal areas, as black people attempted to secure their livelihoods by selling their labour in the cities and on the large-scale farms. According to Bernstein the numbers of black ‘peasants’ in the reserve areas declined from 51% (in 1936) to 8% (in 1951) (Bernstein, 1996:8).

Secondly, economic instability increased, as a result of the NP government’s skewed and inefficient fiscal allocation to the agricultural sector of the Apartheid economy, at the expense of the South African economy at large. This fiscal instability provided an open door for international institutions, who demanded economic and legislative conditions favourable to their economic interests in return for loans which the NP government required to prop up the Apartheid system. This situation laid the procedural groundwork for the ingress of the large agro-industrial TNCs into South Africa’s previously protectionist agricultural sector. As has been discussed previously in Chapter 3, these TNCs were able to leverage their ability to influence US policy with regard to the South African agricultural sector. Together with the introduction of the Washington Consensus measures, a wave of neo-liberalism swept through the South African economy. This free-market approach to the economy was further entrenched by the new ANC government in 1996 and the skewed subsidisation of the agricultural sector was

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effectively concluded. Without state support those farmers who did not have a globally competitive scale of operation and who were unable to profitably compete in the global agricultural market, were forced out of the agricultural sector. As one of the interviewees said, “The problem with small-scale farmers is that the profitability of agriculture is not very good, if you are not big you cannot make a lot of money, you need to have a scale of operation” (Interview 5). As a result, the bipolar structure of South Africa’s agricultural sector was further strengthened, relegating small-scale farmers to a local subsistence economy.

With the end of the NP government in 1994, “The new Government of National Unity continued the economic policies of its predecessor, emphasizing a market orientation overall, but allowing government intervention when necessary” (Byrnes, 1996). In an attempt to settle the NP’s residual debt the Government of National Unity responded, by imposing a, “Tight fiscal policy... and cutting tariffs more deeply than required by the WTO” (Carmody, 2002:258). This gained South Africa the description of hyper-liberal<sup>23</sup>, coined by Carmody in his *‘Between Globalization and (Post) Apartheid: The Political Economy of Restructuring in South Africa’*. Together with the Apartheid legacy, the liberal orientation of the Government of National Unity and the ANC government has had a clear impact on the South African agricultural sector, as the following government publication acknowledges:

“Since 1990, several processes have taken place to reverse discriminatory legislation and to improve participation, while at the same time several other initiatives have been implemented to deregulate and liberalize the sector. Some of these actions had positive results while others had unintended consequences” (GoSA, 2003).

These “unintended consequences” are exemplified by land related issues. As previously mentioned, agricultural land distribution was heavily biased toward large-scale white farms during the apartheid regime. Realizing that land issues would become a contentious election issue, the NP attempted a land reform process prior to 1994. This process was based on the ‘willing-buyer willing-seller’ principle, through the Provision of Land and Assistance Act of 1993. The act made provision for financial assistance to

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<sup>23</sup> The hyper-liberal term has been used by Carmody (2002:258) to define the South Africa political approach after the 1994 elections.

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previously disenfranchised tribal members, making it possible for them to acquire land and secure tenure rights (Attfield et al, 2004: 410). However many of the large-scale white farmers were not willing sellers and the process was virtually ineffective. The ANC's 1994 election manifesto explicitly states that a land redistribution process is one of the party's main pillars (Bernstein, 1998:5). Like the NP, the ANC hoped that this process would achieve, "The goals of social justice with [*through*] the principles of market-led land reform" (Walker, 2003:118), this process is complex and ongoing. To demonstrate these complexities, South Africa's 1996 Constitution defines land reform as having three distinct aspects, namely: restitution, redistribution and tenure reform (Attfield et al, 2004:410). While restitution and redistribution attempted to redress the imbalance between white and black land ownership. Tenure reform sought to confer land ownership to black people living on communal land in the previously termed 'tribal reserve areas'. Tenure reform turned out to be a politically contentious issue, with traditional leaders viewing this process as an attempt to undermine their traditional tribal authority. As a result, in 1999 the national policy framework integrated traditional leaders into the debate over land issues, and further moved to link agricultural policy with land reform (Walker, 2003:121). To further encourage previously disadvantaged black farmers to move into the large-scale agricultural sector, a process termed the Land Redistribution for Agricultural Development (LRAD) was launched by the ANC government in 2000.

According to official figures from the 2006/07 Department of Land Affairs Annual Report (Figure 2), by 2007, 74 417 claims out of 79 696 submitted were delivered through the restitution process, representing 1,897 million hectares (GoSA, 2007). When added to the 2,299 million hectares delivered to date through the redistribution process (Figure 3), a total area of just over 4 million hectares has been delivered to the previously disenfranchised black population through these two aspects of the land reform process. The tenure reform process has effectively stalled, with the ANC unwilling to risk provoking traditional leaders and the traditional leaders unwilling to transfer control of the former 'tribal reserve areas' to individual households. Taking into account the ANC committed itself to redistribute 30% of agricultural land holdings within five years (Hall, 2004:214) and the fact that agricultural land were approximately 86 million hectares at the start of the process (ibid), there are concerns that the ANC's

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land reform process has failed to achieve its goals, having delivered less than five percent of its proposed target after more than 14 years of governance.



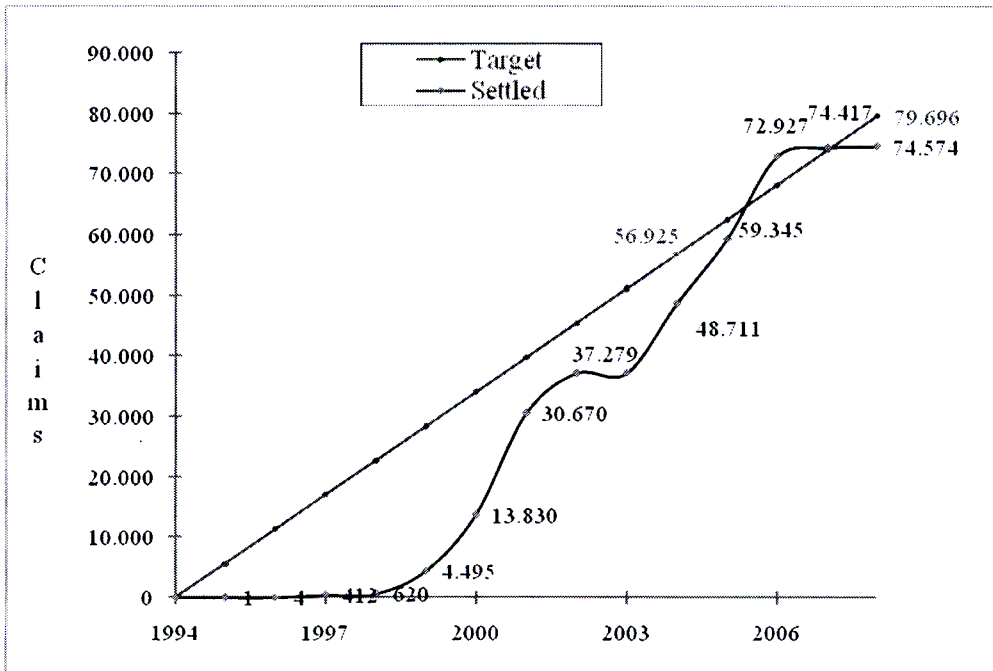


Figure 2: Cumulative Restitution. Claims vs. Results

Source: GoSA, 2007

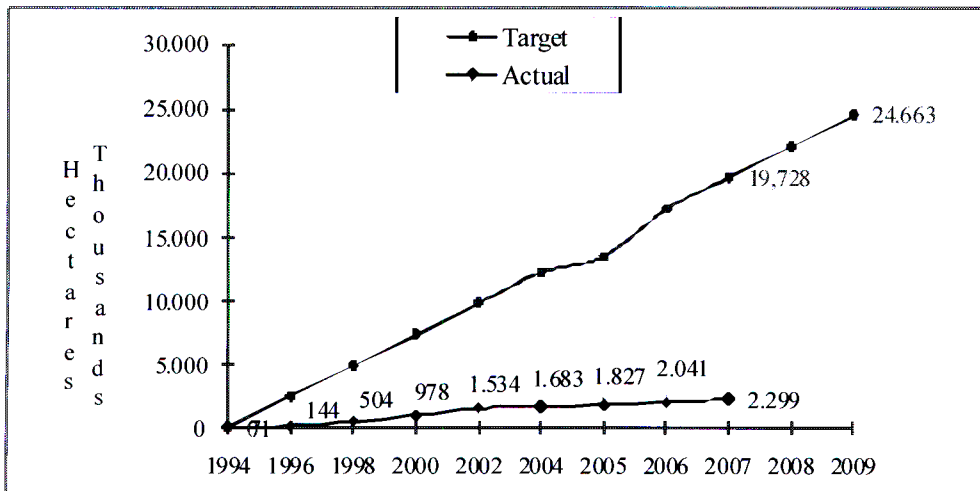


Figure 3: Cumulative Redistribution. Delivered vs. Targeted.

Source: GoSA, 2007

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It has been argued by the CDE, "...That the land reform process was characterized by very large ambitions, a limited ability to deliver, rising public and political expectations, and a growing sense of inadequacy and failure" (CDE, 2008:45). During this dissertation's interview process, interviewees generally agreed that the land reform process had failed and suggested several reasons for this. The first being that for black, previously small-scale subsistence farmers, the difficult and risky initial period of large-scale commercial agricultural production has not been adequately supported by the state, as they suggest:

"Land reform has to go hand in hand with support like training, credit, infrastructure and all those things. Land reform without backup will just end in a total maze" (Interview 6).

"No, the State is not supporting these new farmers. For the large-scale commercial farmers the issues are certainly on land reform and any kind of incentive to invest in agriculture and improvements on the land. For the emergent commercial farmers the issue is accessing farms that are large enough. It is having good institutional arrangements towards the ownership structures and the management of those particular farms to ensure that they are productively and profitably used" (Interview 4).

"They [*government*] should support much more than what they are doing at the moment. It does not help to just put people on the land and not to give them financial support and technical support to develop" (Interview 5).

Second, that there is a lack of knowledge amongst the black population who were driven from their lands, regarding the day to day operation of a large-scale commercial farm. According to the interviewees, this is because:

"I think a lot of people would potentially be small-scale farmers but through apartheid, a lot of people have lost land and also farming skills. So the rural knowledge regarding the [*black*] farming sector is very much under-estimated. For example, in communities who are receiving land through the Land Restitution process; the older people who were the farmers and had the great farming knowledge, have not been able to pass on knowledge to younger people who could organize themselves. I think there is a big gap on small-scale farming knowledge because of that" (Interview 7).

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“The main problem is education. There are a lot of teachers that want to move into farming; they have teaching qualifications but they do not have any farming knowledge nor experience in the farming field” (Interview 2).

“What happened in the past up to now, in a lot of cases [*in the land reform process*], is that people who are not farmers are put on farming land. So there are a lot of disasters and very little success in land transformation at the moment... You do not become a farmer just by owning land; you need to know what to do” (Interview 5).

Third, farming is perceived as a cure-all for the problems associated with rural poverty amongst previously disadvantaged black South Africans. However, this may not necessarily be what the people themselves want. According to one interviewee:

“A lot of people see agriculture as something that you do if you do not have other options. A lot of the communities who are recipients [*beneficiaries of land restitution*] are not really agricultural communities any more [*they are migrant worker communities*]. What is happening with land reform is that the people are taking suburban areas to the rural areas” (Interview 7).

Consequently, there has been a gap between government expectations and the people’s wishes regarding land use. According to one interviewee, there are many reasons besides farming why people want land, such as for housing or to recover ancestral lands (Interview 2). In addition, due to the market driven willing buyer willing seller process, the majority of the land redistributed so far has been situated in areas of low agricultural potential. As a result, new landholders have been unable to utilise this redistributed land to profitably access the agricultural market sector (Schirmer, 2000).

Together with, “The rapid process of deregulation and liberalization in the past decade” (GoSA, 2003), the failure of the land reform process has negatively impacted both large and small-scale South African farmers. According to the department of agriculture:

On one hand, “greater exposure to international competition has affected their [*commercial farmers*] competitiveness negatively, causing many farmers to leave the industry. [*On the other hand*] in this much more competitive and open economy, small-farming systems are also failing or finding it difficult to become part of mainstream agriculture” (GoSA, 2003).

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#### ***4.3.2 Seeds and the role of the agro-food corporations***

Productive land is a necessary and critical component of the agricultural process; it is an essential capital requirement for a farmer, irrespective of the scale at which they farm. Farming has many necessary economic inputs however, one of these, a key determinant of both the initial costs and the final selling price (hence the farmers profit margin) are seeds. As previously discussed, seed procurement in South Africa is a complex issue. It is a country with a deeply bifurcated agricultural sector, in which small-scale farmers do not benefit from market liberalization to the same degree as large-scale farmers. In addition, seed procurement strategies utilized by large and small-scale farmers further characterizes the skewed and bipolar structure of the South African agricultural sector. For example, South Africa is one of a small number of Southern African countries where there is a well-developed formal seed market utilized by large-scale farmers and protected by copyright laws and the legal system (Zerbe, 2001:659) side by side, with a growing informal network of farmers who share and exchange farm-saved seeds, predominantly utilized by small-scale farmers (Wynand, 2006). This informal network, has become an important seed ‘bank’ in which many South African “communities are building up seed stocks” (CPSI, 2007:3).

South Africa’s formal seed industry was established during the 1940s by the Seedsmen’s Association of SA (GAIN, 2003:2) and it was nationally consolidated in 1989 with the creation of the South African National Seed Organization (SANSOR) (GoSA, 2005). SANSOR is a conglomerate of organisations and associations such as: The SA Hybrid Maize Seed Organization (created in 1960); the SA Plant Breeders’ Association (1967); the SA Forage Seeds Association (1980); and the Seed Analysts Association of SA (1981) (GAIN, 2003:2). According to SANSOR, their “Primary mission is to represent the seed trade, protect and promote industry interests ... and render specific services to its members” (SANSOR web page<sup>24</sup>).

Analysing SANSOR’s members (SANSOR web page), one could realise how this association means the consolidation of the control of the South African seed industry into one private organisation, accords with the demands made by the Washington Consensus measures. As previously discussed, procedural measures such as these were

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<sup>24</sup> <http://www.sansor.org/about.htm>

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broadly instituted by the South African NP government during the 1980s, to reshape the economy as a pre-condition for further loans from international financial institutions such as the IMF. SANSOR does not effectively represent or cater to farmers in South Africa, particularly small-scale farmers. On the contrary, the interest and protection of the trans-national seed companies takes precedence over farmers' interests and requirements.

SANSOR oversee a commercial seed market where hybrid seeds currently outsell GM and traditional varieties (despite GM's recent popularity amongst the large-scale commercial agricultural community). In a 2005 report by the Department of Agriculture, "GM cotton accounted for approximately 90% of local cotton seed sales, while this estimate was 52% and 20% for genetically modified soybean and maize seed respectively" (GoSA, 2005:1). The trend toward biotechnology was set in motion in 1978, when SAGENE (the South Africa Genetics Society<sup>25</sup>) was "established ... to guide government and the seed industry on biotechnology" (GAIN, 2003:3).

In contrast to large-scale commercial farmers, small-scale farmers rely on informal seed networks and traditional agricultural knowledge to select, save and cultivate seeds. However, the formal seed industry are neither supportive of this informal seed network nor traditional knowledge. The reason for this lack of support is the same reason that the formal seed industry protects 'their' seeds with hybridization, biotechnology and copyrights. Both SANSOR and SAGENE represent and promote trans-national agri-corporations and assist them to secure their seeds and thereby their economic interests. There has been a long history of farming de-skilling in which a lot of traditional knowledge has been lost. Using this de-skilling process, TNC marketed 'their' seeds as the pre-eminent, 'highly knowledge based' and highly productive, technological solution to modern agriculture, whereas traditional knowledge and saved seeds are derided for being outdated, unproductive and unable to compete effectively or profitably in the modern agricultural sector.

According to one interviewee, the promotion of the idea that hybrids or GM seeds are the best method of obtaining food security has been strongly promoted by the economic

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<sup>25</sup> <http://sagene.co.za>

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interest of the trans-national Agri-corporations who dominate South Africa's formal seed market (Interview 7). According to another interviewee, Monsanto, Du Pont's Pioneer Hi-Bred and Pannar, "Are the three main seed companies [*operating in SA*]" (Paget-Clarke, 2002). The formal seed market is currently being monopolized by Monsanto, who according to the same interviewee, "Is buying up the [*South African*] seed companies. They've already bought up the main wheat seed company and they own 52 percent of the maize [*corn seed*] market" (Paget-Clarke, 2002). The monopoly of South Africa's formal seed industry by this American company, Monsanto (one of the world's largest trans-national agro-chemical corporations) empowers it to lobby governments to facilitate the introduction of its products into the market and to shape the SA agricultural sector in its favour. As further explained by a local anti-GM activist, TNC Agri-chemical corporations have aggressively lobbied the South African government:

"The government has followed the biotech industries, and it seems that although there are people in government who are concerned, it is obvious that very powerful people have been influenced in one way or another to refuse to see the problems with GM crops... I think what has happened is that a couple of people in high positions have been hijacked by overseas corporations not only in the agricultural sector, in the nuclear sector, in the arms sector... there is not much difference in the agricultural sector [*since the defeat of the Apartheid regime*]. There is a continuation of their [*Government*] lies" (Interview 6).

Monsanto are a good example of how the United States' economic and strategic interests in the South African agricultural sector have shaped it over the past half century. Monsanto established its economic activity in South Africa in 1968 (ACB, 2005:1) viewing the country, in the words of Monsanto's Managing Director for Southern Africa as, "The [*political, social and economic*] gateway into Africa" (Kahn, 2004).

When comparisons are made between changes that took place in the international agricultural sector (previously discussed in Chapter 3) and the South African agricultural sector, during the past half century; it is evident that South Africa has replicated the Global Agricultural System's methodology, which has largely been promoted by the economic aims and objectives of the United States (Cutts and Kirsten,

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2006:324). In South Africa's agricultural sector, as in the global agricultural sector, this has meant that a neo-liberal free market economy, sanctioned by government, has become highly protectionist of 'knowledge', through intellectual property rights, while at the same time privatizing the nation's natural resources.

#### **4.4. South Africa: biotechnology, the government and Intellectual Property Rights**

South African is atypical in the Southern Africa region, not only due to its well-developed infrastructure, strongly bifurcated agricultural sector and consolidated formal seed industry; but also as a consequence of its relatively long history of agricultural research and the early adoption of biotechnology by their commercial agricultural sector. In addition, the South African government is at the forefront with regard to their promotion and Intellectual Property Right protection of biotechnology in the agricultural sector.

##### **4.4.1 South Africa's research experience**

As previously discussed the post 1948 NP government's policy, was to fiscally support and procedurally encourage the growth of the large-scale, commercial, white agricultural sector. To that end, according to Njobe (1999:115), breeding research into commercial seed crops was initiated during the 1950s. By 1960, South Africa's first gene bank was established (Njobe, 1999:115). Together with those banks subsequently established, this gene bank would have favourably contributed to the research and breeding of commercially popular, high yielding, hybrid seed varieties. In addition, these seed banks would more recently have provided a crucial source and rich diversity of South Africa's traditional genetic material, to the Agri-industrial TNCs engaged in the global biotechnology sector.

With the advent of recent advances in genetic research and the promise of dramatic yield increases, biotechnology, rather than hybridization, rapidly became a central pillar of South African agricultural research in the 1990s. This biotechnology sector, previously encouraged by the NP government toward the end of their regime, was almost immediately further strengthened by the ANC government once they had taken

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office after 1994. As one interviewee asserted, “We [*South Africa*] have a very strong biotech sector from the [*democratic*] transition [*from the NP to ANC government*], so we have got a lot of Scientifics [*biotechnology corporations*] who are invested in biotechnologies” (Interview 7). In 2001 the ANC declared that they had a “Solid history of engagement with ‘traditional’ biotechnology” (GoSA, 2001:i), presumably conflating South Africa’s traditional genetic resources and biotechnology into one concept. According to ANC government documentation from this period, first and second generations of biotechnologies had been applied to the Agri-industrial sector in South Africa. The national agricultural sector was described as experiencing a transition to the widespread commercialisation of a third generation of biotechnologies namely, Genetic Modifications (GoSA, 2001:i). This third generation arrived as result of a renewed determination by the ANC government to further, encourage the growth of the agricultural sector and support the agricultural research process. As witnessed by the following interviewees:

“All these Scientifics [*biotechnology corporations*] want to secure jobs, so we [*South Africa*] are very easy partner in terms of developing biotechnologies” (Interview 7).

“South Africa [*has been*] a good launch pad for the biotech industry because we have sophisticated universities, laboratories, a good infrastructure system, good banking and a lot of large-scale commercial farmers [*the largest consumers of the biotech industry’s products*]” (Interview 6).

Besides government support, Paget-Clarke suggests that South Africa was also chosen as Southern Africa’s initial entry point, of this third generation of biotechnologies, for commercial reasons:

“GE [*Genetic Engineering/Modification*] has been introduced in South Africa first, precisely because of it’s commercial farming. You have a good infrastructure. You have a very established seed industry, a commercial seed industry. It was very easy to introduce it. Those farmers growing GE [*Genetically Engineered/Modified*] crops were already in the commercial farming system so it was just the next step” (Paget-Clarke, 2002).

The ANC government is acutely aware of the commercial rationale for foreign investment in South Africa and their aim has been to use it to South Africa’s economic



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advantage. According to Rangasamy, the ANC's, technological, industrialized, modernized and neo-liberal approach to the agricultural sector came with a clear, "Intention of shaping South Africa's re-entry into the world economy" (Rangasamy, 2005:370). The application of the third generation of biotechnologies to the agricultural sector is therefore seen as furthering this intention. The ANC government's National Biotechnology Strategy (NBS) states that, "Biotechnology could play an important part in this African globalization, with South Africa as a leader and the centre for training and innovation" (GoSA, 2001:9).

#### **4.4.2 Adoption and consolidation of GM in the agricultural sector**

In the rush toward 'African globalization' of the agricultural sector, South Africa was not procedurally prepared domestically for the adoption of biotechnology by their own commercial agricultural sector. When in 1989 the first applications for field trials were submitted for approval, to the NP government, there was no relevant legislation at all. (Kandawa-Schulz, 2000 in Nap, 2003:7). Seemingly unaffected by the lack of legislation or regulations, the first GM field trial was conducted in 1992 (Njobe, 1999:115). According to a spokesperson from the Agri-TNC concerned:

"We started this GMO [*Genetically Modified Organism*] thing in the early 1990s. It was specifically Bt maize [*corn seed genetically modified with the addition of the bacteria - *Bacillus thuringiensis**] and we brought it from the US together with the ARC [*Agricultural Research Council*] imports" (Interview 5).

This underscores the intimate nature of the relationship between South Africa's NP government of the day and a US Agri-TNC in the agricultural sector. It further illustrates the NP's commitment to the application of biotechnology in the agricultural sector. For the Agri-TNC concerned, establishing this intimate relationship with the government of the day demonstrates the level of their economic interest in South Africa

After 1994, despite having no clear legislative procedure regarding GM (until 1999, when the Genetically Modified Organisms (GMO) Act came into effect (see the following section)) the ANC government continued to support the introduction of GM into the agricultural sector. The ANC additionally encouraged the early consolidation of South Africa's biotechnology sector and facilitated the rapid pace of GM's introduction.

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As a result, according to Nap, “The number of field tests on GM organisms increased from 12 in 1995 to 45 in 1999” (Nap, 2003:7). By 1999, 165 applications for Genetically Modified commercial seed crop field trials had been approved (Mayet, 2000:1), making South Africa “a clear leader in getting events into the field” (Sithole-Niang, 2004:566).

Regarding the release of Genetically Modified seeds for commercial cultivation, by 1998, several GM maize and cotton varieties had been authorized (Mayet, 2000:1). Turning South Africa into, “The only African country in which GM cotton and yellow and white maize have been commercially released” (Thirtle et al, 2005:44). Thus, under the auspices of the ANC government, South Africa had become an African biotechnology trendsetter. As claimed by the ANC’s NBS in 2001, South Africa, “Is one of the few countries in Africa that has commercial production of GM crops” (GoSA, 2001:9). Furthermore, South Africa is the first country in the world growing GM white maize for human consumption, which also happens to be the country’s most widely cultivated staple crop (Paget-Clarke, 2002).

The commercial release of GM white maize in 1998 (prior to the 1999 GMO Act) did not follow normal procedures, which according to an interviewee, should have been as follows:

“The evaluation process takes place before a crop is approved by the government. GM crop have been through a regulated testing and evaluation period, for 6 to10 years before a crop is actually approved for commercial cultivation” (Interview 3).

The fact that GM white maize was commercially released, six years after the original field trials were conducted in South Africa and prior to the promulgation of the GMO Act in 1999, demonstrates that the NP and ANC governments both made a clear choice to promote and rapidly adopt biotechnology in the commercial agricultural sector, even though adequate legal conditions were not yet in place to do so.

South Africa has become an African biotechnology leader, not just because of its early adoption of Genetically Modified commercial crops but also because of its strongly consolidated biotechnology sector and due to the rapid increase in the commercial use of GM seed crops for human consumption. For example, from 2005 to 2006, cultivation

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of GM white maize increased from 8,6% to 28,8% and GM yellow maize increased from 24% to 30,5% of South Africa's arable land (Wynand, 2006). By 2007 approximately 1,6 million hectares of South Africa's arable land area was planted with GM maize (Reuters, 2008). More recently, GM soybeans have been commercially released in South Africa, the initial area planted with GM soybeans increased by 135 000 hectares in 2005/6 to 144 000 hectares in (2007/8) (Wynand, 2006; Reuters, 2008). GM cotton has dominated commercial cotton farming since its introduction, according to Wynand, in 2006, "The share of GM cotton remain[ed] at 90 to 92 percent of the total [area cultivated]" (Wynand, 2006). The total arable land area cultivated with the three dominant GM crops (maize, soybean and cotton) rose from 515 000 hectares in 2005 (Wynand, 2006) to approximately 1,8 million hectares in 2007/8 (Reuters, 2008).

Despite this increasing tendency, there is a quite interesting fact related to the kind of GM crops that are being used in SA. According to one key informant:

"Most of the technologies that are currently being demanded [*in South Africa*] from the communal areas [*traditional informal sector*] are for more labour-saving<sup>26</sup> technologies than land-saving<sup>27</sup> technologies. Which seems to be contrary to what you would expect because at the moment, there is a high unemployment and you would expect labour abundance [*cheap labour*]" (Interview 4).

This statement is surprising, not only due to the current high levels of unemployment in South Africa, yet at the same time a demand for labour saving GM seed biotechnologies. But also, because it may suggest that the ANC's economic strategy for biotechnology in the agricultural sector may not be adequately promoting sector wide growth. Despite their land reform shortcomings, the ANC have gone to great lengths to redress land issues in South Africa, presumably to offer traditional small-scale farmers more access to arable land, to encourage growth of the informal agricultural sector. The fact that GM seeds, which reduce labour demands, are being demanded in this sector indicates that unemployment will in all likelihood not decrease, as a result of the introduction of biotechnology into this sector. In addition, in order to achieve the best results when cultivating these labour saving GM biotechnologies, the specific use of a

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<sup>26</sup> Those which genes have been modified to decrease labor requirements, such as weeding activities or pesticides applications (Interview 4)

<sup>27</sup> Those which genes have been modified to increase yield per unit of land (Interview 4)

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chemical herbicide called Round-up is required. Round-up is an expensive proprietary chemical herbicide belonging to the US based Agri-TNC, Monsanto. According to Kahn's 2004 paper entitled, '*SA gateway into Africa*', Round-up is highly profitable and contributed toward 40% of Monsanto's global profit (250 million USD) at the time. When a farmer demands this labour saving GM biotechnology, in order to obtain the major benefit from it, its necessary to purchase Round-up, contributing directly to Monsanto's large global profit margin and possibly, in South Africa's case, at the expense of decreased unemployment in the informal sector (as discussed above). The Agri-TNC's, are clearly non-discriminatory and do not discern the economic differences between the formal and informal agricultural sectors where the application of biotechnology is concerned. Their roles as capitalist enterprises are to anticipate and meet the demands of their customers and where possible to create and satisfy needs, in order to maximize their profits. This is a role that the Agri-TNCs supported by South Africa's ANC government have become highly efficient at. As suggested by an interviewee employed in the agricultural sector, "GM crop planting is growing every year in South Africa, we sell more and more Bt crops and more and more Round-up every year" (Interview 5).

#### **4.4.3 Legislation and regulation**

In South Africa, the introduction and adoption of GM seed crops and the consolidation of the biotechnology sector has largely been possible due to political adroitness. Less than three years after the 1994 elections, the South African government launched, 'The Genetically Modified Organisms Act' (No. 15 of 1997). This states (amongst others aims) that it, "provides for measures to promote the responsible development, production, use and application of genetically modified organisms" (GoSA, 1997), and two years later, in December 1999, the GMO Act legislatively came into force. However, as an interviewee explained:

"Before 1994 [*NP government*] we were evaluating GM crops and, in fact, all the processes for the GMO Act were initiated before 1994. After 1994 [*ANC government*] we have [*the GMO Act*] [*which*] was [*only*] approved and implemented in 1999. So I would like to think that the responsibility and the care was shaped before 1994 and carried on and improved after 1994" (Interview 3).

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Both the promulgation of the 1997 GMO Act and the manner in which it has been utilized has been highly controversial. Technically, only once the GMO Act came into effect in 1999, could GM evaluation processes, field trials and commercial releases, occur within a valid legal framework. And, despite recommendations from interested and affected parties, the 1997 GMO Act did not alter the way in which GM crops had previously been commercially released. For example, according to Mayet, the 'Precautionary Approach (Principle)' (acknowledged in other government statutes) is not clearly gathered in the 1997 GMO Act (Mayet, 2000:2-3). Furthermore, according to an interviewee, "It is an Act more to ratify GM products, than to regulate them" (Interview 6). Ashton similarly suggests that the 1997 GMO Act became a set of regulations to facilitate the introduction and consolidation of GMOs in the agricultural sector (Ashton, 2006).

Ashton further notes that once the GMO Act was promulgated, regarding individual GMO trial applications, "Conflicts of interest have been noted between regulators, advisors and industry players in the South African situation" (Ashton, 2006:110). Despite these conflicts of interest, Mayet suggests that there has been a distinct lack of public participatory space regarding the oversight and regulation GMO applications (Mayet, 2000:2-3). As Ashton suggests this may be, "Because the public does not have the resources to oppose big business's applications..." (Ashton in Kahn, 2004).

In June 2001, the South African government's National Biotechnology Strategy was launched by the ANC's Minister of Arts, Culture, Science and Technology. The document is prefaced with text that praises the virtues of biotechnology, clearly indicating the government's preferential strategy for the following century:

"The first century of the new millennium will belong not only to communications, or information technologies, but also to biotechnology, which will bring unprecedented advances in human and animal health, agriculture and food production, manufacturing and sustainable environmental management" (GoSA, 2001:v)

The 1997 GMO Act and 2001 NBS have strongly allied the South African ANC government's position on biotechnology, with the position pioneered and internationally promoted by the United States' government and Agri-TNCs. With the 2001 NBS, like

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its northern big brother (US), South Africa's ANC government has explicitly assumed a pro-GM approach. However, South Africa is also a signatory to the Cartagena Protocol on Biosafety<sup>28</sup>, which was signed by ANC government representatives, in August 2003<sup>29</sup>. The protocol, "Seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology" (CBD webpage). South Africa's adoption of protocol measures would have at least two closely linked consequences that would undermine the South African ANC government's objectives (as stated in their NBS). Firstly, it would mean an in-depth amendment of the GMO Act, putting it in line with the Precautionary Approach. And secondly, the pace at which new GM crop varieties are being released commercially would have to be reduced. It is not surprising therefore that to date; the Cartagena Protocol has not been ratified by South Africa's ANC government.

Furthermore, the ANC government's pro-GM position has meant, according to Ashton, that South Africa is described as "...The only [*African*] nation that has consistently failed to acknowledge the African Position as a valid point of departure" (Ashton, 2006:111). Like the Cartagena Protocol, the 'African Position' implies that a Precautionary Approach should be taken with regard to the use of biotechnologies. It is a position espoused by the 'African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders, and for the Regulation of Access to Biological Resources in Relation to International Law and Institutions'<sup>30</sup>, endorsed by the African Union (of which South Africa is a member) in 2001 (Ashton, 2006:108). On line with these thoughts and opposed to the SA position, other Southern African countries, such as Zambia, denied GM food aid from US, even in a difficult situation like the 2002 famine, considering that "it gives governments of poor countries some control of their economies and their farming systems" (Patel and Delwiche, 2002:5).

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<sup>28</sup> "The Cartagena Protocol on Biosafety to the Convention on Biological Diversity was adopted by the Conference of the Parties to the Convention on 29 January 2000. By that date the Protocol had received 103 signatures.

<sup>29</sup> <http://www.cbd.int/biosafety/signinglist.shtml>

<sup>30</sup> <http://www.grain.org/brl/?docid=798&lawid=2132>

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#### **4.4.4 Property Protection**

The South African government have also been one of the first in Africa to introduce Intellectual Property Right (IPR) Protection, in the interest of protecting its national biotechnology research sector and commercial seed industry.

Starting with the promulgation of the Plant Breeders Rights Act No. 15 of 1976, followed by the Patent Act No. 57 of 1978 and continuing with the NBS in 2001, South Africa's governments have actively protected IPR. This protection has almost mirrored similar US legislation. Because, as stated in the ANC government's NBS, "protection and exploitation of intellectual property" is one of the main aspects of the United States' successful biotechnology sector. Furthermore, the NBS states that:

"We can also learn from developed countries such as the USA that has the largest and most profitable biotechnology industry... The extraordinary success and growth rate of the USA biotechnology sector is the result of many factors that are most easily considered within a framework of the production, protection and exploitation of intellectual property" (GoSA, 2001:12)

In fact, an American Agri-TNC (Monsanto) is the main holder of GM patents in South Africa (Paget-Clarke, 2002). As clarified by an interviewee, South African based seed companies do not have GM licences, "Every licensed [*GMO*] in SA is from Monsanto" (Interview 5).

#### **Plant Breeders Rights (PBR)**

By promulgating the Plant Breeders Rights Act No.15 of 1976, South Africa opened the door to become the first African member country of the International Union for the Protection of New Varieties of Plants (UPOV) in 1977 (UPOV, 2007b). According to Njobe (1999:115) "South Africa ratified UPOV as part of the overall support for plant breeders' rights". This is significant, suggests Dutfield, because "Until the late 1990s, the overwhelming majority of UPOV members were developed countries, reflecting the fact that in many developing countries, especially in Africa, private sector involvement in plant breeding and seed supply is quite limited" (Dutfield, 2008). According to Dutfield (2008), to be part of the UPOV, countries have to have PBR legislation in place and this is "scrutinized by UPOV to see that they are in harmony with the Union's provisions". Few African countries have PBR legislation in place, which currently

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means that South Africa, together with Kenya, Morocco and Tunisia, are the only African countries to be members of UPOV (UPOV, 2007b).

As previously mentioned in Chapter 3, individual governments are free to decide whether to uphold the farmers' privilege (to retain and replant traditional seed varieties) or not. In South Africa's case, the Plant Breeders Rights Act of 1976 promulgated by then NP government seems to preserve this privilege. Also, a consolidation of Section 23 of this act (No.97 of 1986), specifies some exceptions with respect to the plant breeder's rights, namely:

(3) It shall not be an infringement of a plant breeder's right if a person who procured any propagating material of a new variety in a manner which does not infringe any right of the holder of the relevant plant breeder's right:

(a) resells it;

(b) sells any plant, propagating material or product derived therefrom for purposes other than the further propagation or multiplication thereof: Provided that the provisions of this paragraph shall not permit the sale of a product if such sale is in terms of subsection (1A) subject to a plant breeder's right; or

(c) uses or multiplies it in the development of a hybrid or a different variety or for purposes of any other *bona fide* research: Provided that the repeated use, without the necessary authority, of the relevant propagating material for the commercial production of a different variety, shall constitute an infringement of a plant breeder's right" (GoSA, 1986:10).

According to GAIN (2003:2), in 1996 South Africa's ANC government further amended Plant Breeders Rights Act of 1976, to meet the demands agreed to (by the then NP government) at the 1991 UPOV convention. Nevertheless, according to an official UPOV membership list (UPOV, 2007b:1), the most recent convention to which SA is a signatory is 1978, which was signed in November 1981.

To clarify these points it is important to state that the above mentioned exceptions to section 23 of the Plant Breeders Rights Act remained almost unaltered in subsequent amendments. For example, in the Plant Breeders Rights Amendment Act of 1996, No. 673 (No. 15 of 1976), Section 23 still excepts the breeders' rights in relation to the propagation of material for *bona fide* research or multiplication purposes, for private and non-commercial use. Thus, if for instance a traditional small-scale farmer were to



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re-sow and re-harvest proprietary seeds, he or she is entitled to do so, provided that each subsequent harvest is not sold in the market place, thereby securing the individual farmers' privilege at a household subsistence level. However, the farmers' privilege has been further limited by a subsequent clause stating that, "Harvested material obtained from the replanted propagating material shall not be used for purposes of propagation by any person other than that farmer" (GoSA, 1996:43). Thus, if a farmer were to re-sow and re-harvest proprietary seeds, he or she is not entitled to share or swap the seeds with a fellow farmer, thereby restricting an essential traditional behaviour of small-scale subsistence farmers. This means, even though South Africa is still a party to UPOV's 1978 convention which allows for the farmers' privilege. recent amendments to South Africa's PBR Act in 1996 reduces farmers' privileges as well as it is gathered on the UPOV 1991 Act; thus, it has restricted the farmers' privilege in a manner that directly impacts food security and food sovereignty at a traditional, small-scale, household level.

Furthermore, this impact is once again the result (as with GMO regulation) of the South African ANC government's protection of predominately foreign Agri-TNC interests. As attested to by a 2003 GAIN report,

"In December 2000, South Africa registered about 1,653 plant breeders, of which 40% are South African, with the remaining owned by US (15%), Dutch (12%), and Germans (11%)" (GAIN, 2003:2)

### **Patents**

The Patent Act No. 57 of 1978 has been amended several times, such as in 1988 (amendment No. 76) and in 2002 (amendment No. 58). In the 2002 amendment, within the section on Patentable Inventions (Chapter V: 25 (4b)), it specifies that:

"A patent shall not be granted for any variety of animal or plant or any essentially biological process for the production of animals or plants, not being a micro-biological process or the product of such a process" (GoSA, 2002:19).

Despite the contrary position between South Africa's and the United States' patent law on the matter of patenting life, the official position of the South African ANC government has been aligned itself with United States' position. For example, in accordance with the International Undertaking for Plant Genetic Resources of 1998 (IU), during FAO negotiations, all the African delegates, except the ANC government

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delegates from South Africa, appealed against the patenting of living organisms and the monopolization of genetic resources. In addition the South African ANC government's NBS praises the development potential that followed the United States' economic utilization of 'new life forms':

“There are a variety of lessons that South Africa can learn from the organisation and management of biotechnology in other countries... The decision by the USA Patent Office to allow the patenting of new life forms ... has a proven utility. This decision encouraged the early development of biotechnology industries in the USA” (GoSA, 2001:10-13).

A further consolidation of international patent systems related to plants and seeds, is the World Trade Organisations' 'Trade Related Intellectual Property Rights Agreement' (TRIPS). That, “Requires all WTO members to grant intellectual property rights on plant varieties (seeds)” (GRAIN, 2001:1-2). The agreement expressly forbids exchanges, re-sows and formal or informal commercialization of proprietary seeds. South Africa has been a member of the WTO since the 1<sup>st</sup> January 1995 when the WTO was launched (WTO web page<sup>31</sup>). In order to remain a WTO member and benefit from doing so, South Africa has to adhere to all WTO agreements, including the TRIPs Agreement. This action, once again, predominately benefits South Africa's larger trade partners and as with plant breeders' rights, undermines the traditional practices and procedures of seed sharing and swapping in the rural areas of South Africa.

Collectively, the result of breeders' rights, property right protections and the TRIPS agreement in South Africa is to directly threaten the food security and food sovereignty of traditional small-scale farmers' in the rural areas. In addition, if a broad uptake of GM occurred in the rural areas and these measures were effectively policed there, they could have drastic and negative impacts on the growth of the informal market sector.

#### **4.5. Food Security and Food Sovereignty in South Africa**

In terms of Food Security, South Africa has very divergent levels of vulnerability. At a national level, where food security does not appear to be an issue, individual households can be vulnerable. As explained by an interviewee:

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<sup>31</sup> [http://www.wto.org/english/thewto\\_e/countries\\_e/south\\_africa\\_e.htm](http://www.wto.org/english/thewto_e/countries_e/south_africa_e.htm)

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“South Africa is food self-sufficient or very close to being self-sufficient, if you take into account how much food is produced and how much food is consumed. SA also has a decent balance of payments and the currency is still relatively strong, so even in years where we cannot produce enough food, we can certainly import food. However, we still have too many people who are extremely poor, who cannot afford food and consequently we have a large number of households that are not food secure. The issue of food security is more pronounced at household level not at national level” (Interview 4)

According to a 2002 ANC government publication, “About 35% of the total population, or 14.3 million South Africans, are vulnerable to food insecurity” (GoSA, 2002b: 22). However, this vulnerability does not seem to be attributable to a lack of production in the formal large-scale agricultural sector. As explained by an interviewee affiliated to the agricultural sector, “At the moment, we are cutting back on planting because of overproduction. We have too much maize, too much sunflower, and too much soybean in the country” (Interview 5). Instead it seems to be a problem of access (Interview 7).

### **Access to income**

As has been mentioned, access to food is a key element to obtain food security; economic access is particularly relevant in the South African context, taking into account for instance that 33% of households spend less than R1 000 per month (GoSA, 2002b:22). One interviewee suggested that the government has a role to play in redressing the issue of economic access, as follows:

“The Government needs to look at mechanisms through which it distributes money to the poor. The Government has a role to play to secure food. I think they need to identify those who are highly vulnerable to deal with that” (Interview 4).

This income redistribution is crucial to impoverished households, even more so in the former homelands (Apartheid native reserve areas), where the majority of South Africa’s poorest and therefore most food insecure people live. Those rural communities, contrary to the common understanding of agrarian based rural livelihoods, rely heavily on the ANC government’s social welfare grants. This reliance is due to the fact that currently only 10-15% of rural households’ incomes are attributable to agricultural production (Interview 4).

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To complement the government's income redistribution/transfer policies and to increase the percentage of rural household's incomes that are attributable to agriculture, a comprehensive agrarian reform is necessary. This reform must encourage the formation of a self sustaining agricultural sector by effectively dealing with issues of access to natural resources (land or genetic material), knowledge or institutional support.

### **Access to land**

As previously mentioned, a legacy of unbalanced land distribution resulting from the NP's apartheid policies and the subsequent failure (thus far) of the ANC's land reform process, has contributed to a heavily bifurcate agricultural sector in South Africa. In the informal sector and particularly in the rural areas, small-scale farmers' have become some of the most food insecure members of the population. This insecurity is a result of (amongst other things), insufficient agricultural extension, a lack of access to productive agricultural land, a non existent infrastructural network and limited access to the urban commercial markets. Currently therefore, "Land Reform in the communal areas [*former homelands or native reserve areas*] is critical and it would be highly beneficial towards food security" (Interview 4). Although Land Reform is a necessary condition to redress the past, this action alone will not correct the imbalances in the South African agricultural sector. It is insufficient to merely redistribute or restitute land without at bare minimum addressing issues of farming knowledge and agricultural extension.

### **Access to farming knowledge**

Farming knowledge and agrarian extension is crucial in South Africa, whose rural small-scale farmers were removed from their traditional farmlands during Apartheid and crammed into agriculturally marginal native reserve areas (currently termed communal/traditional/tribal areas). As a result, subsequent generations of household members in these areas have not been able to access the traditional knowledge of their elders, regarding small-scale agriculture. Rather than enabling these farmers to rediscover this traditional knowledge, as suggested by an interviewee, small-scale farmers are currently receiving agricultural extension from the ANC governments' Department of Agriculture which model is based on the large-scale agribusiness model, that heavily promotes the biotechnology offered by the Agri-TNCs (Interview 7). This model assumes that the small-scale agricultural sector in the communal areas has currently in place with all the infrastructural and institutional factors that are necessary

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to function efficiently. As a result of this flawed assumption, the DoA promotes exclusively biotechnologies under staffed and under resourced extension services, rather than offered it as one of a number of choices. This model is not what many small-scale farmers want, as explained by an interviewee:

“Some communities that do have land, not everyone has access to land, but those who have and want support, they are very much been told [*by the extension officers*] you can have this kind of support [*GM seeds*] or none. This is a dishonest approach. If you want help you take this, you take the chemicals and you take whatever they do, otherwise you sit on your own, you struggle on your own. There is a sort of extension package which includes information, seeds and inputs that comes as a start, it is really the debate around the whole package they [*communal small-scale farmers*] get, what part they would want, what kind of support in terms of information or inputs they would want” (Interview 7).

The fact that the extension packages are mainly based on GM crops (Interview 7) is not surprising considering that the ANC government strongly favours and promotes biotechnology in South Africa’s agricultural sector. However, although the ANC government may be confident about biotechnology, the interviewees who contributed to this dissertation confirm that there are a number of South African citizens and farmers who are not. It became clear during the interview process that regarding GM, there is a lack of information, disinformation, and general misunderstanding. On one hand, supporters of biotechnology argue that concerns related to GM crops (specifically health, environmental and social concerns) are not based on real science (Interview 1, 2, 3, 5). On the other hand, opponents of biotechnology deny this, arguing that agro-food corporations promote misunderstanding, by suggesting that Genetic Modification is similar to the process of breeding hybrid varieties (Interview 7). As a result, small-scale farmers are bombarded with this argument and don’t know what to believe, “It is difficult for them [*farmers*] to have gained any information on other issues that they may be confronted with” (Interview 7). For example, there are a number of active non-governmental movements who are attempting to promote organic food production in the communal areas of South Africa (Interview 1, 6). According to an interviewee, when these movements attempt to promote organic farming in the communal areas, “Farmers do not seem to be aware of the process of making GM crops, what they do and what other implications there could be” (Interview 7).

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### **Access to seed**

One of the “other implications” of promoting GM crops in South Africa’s communal areas could be the loss of access to natural resources, for example, genetic resources through the related intellectual property protection. As it has been mentioned before, TRIPs Agreement abolishes farmers’ rights to save and re-sow seeds. This restriction clearly undermines the informal seed sector in which many SA small scale farmers rely on.

According to an interviewee, IPRs are necessary to ensure that Agri-TNCs are able to recoup the costs of expensive research and thereby to further the development of the agricultural sector. And that the major beneficiaries of the development of new varieties are the farmers (Interview 5). But an interviewee who opposes this assertion argues that:

“Patenting on crops only came in the 1990s; companies have been breeding [*hybrid*] varieties for a century or more and making money with them. They would research anyway. What the patent does is give them [*Agri-TNCs*] an excuse to gain extra control of the market [*agricultural market sector*], extra-control, extra-property. The advantage is only for the patent holder, I do not believe there is an advantage for the farmers or society or anybody else” (Interview 6).

The above arguments, suggest that any process of Agrarian Reform should also carefully reflect on GMOs role in the improvement of South Africa’s food security. In this regard, there are currently three main schools of thought. There are the GM promoters who argue that, “There is no reason why these crops [*GM crops*], like any other agricultural improvement, cannot help our food security” (Interview 3). There are the GM sceptics who doubt that GM will lead to an improvement in food security. And there are the GM opponents who argue that GM crops will lead to a decline in food security and reduce food sovereignty. It is quite apparent that South Africa’s ANC government is a GM promoter and has bet heavily on biotechnology which, according to government publications, “Can make an important contribution to our national priorities, particularly in the area of... food security [*amongst others*]” (GoSA, 2001:i). However, the GM sceptics argue that:

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“We cannot rely on biotechnology only. I think we would need to use different strategies... for different situations. It might be dangerous going too much in any direction. I think it [*GM crops*] is useful too, but it does not necessarily mean that it has to be the only tool that is used” (Interview 2).

“I do not think that we are going to see any major changes [*with the use of GM crops*] until the issues of the land tenure reform are sorted out. Because it is a structural constraint to increased production in the communal areas” (Interview 4).

“They [*GM crops*] will play a role, but I think they are likely to play a role in the commercial farming sector, more than in the emergent or the small-scale sector” (Interview 4).

And those who oppose GM crops claim that:

“A lot of food security has been destabilized, in a sense, by the whole agribusiness model of agriculture. Hybrid seeds themselves have probably replaced traditional seeds; traditional varieties that people have been keeping. There has been quite a significant loss of diversity. We cannot blame GM crops, but they are another step in that” (Interview 7).

“The use of GM products is out of the control of peasants [*people who live in the communal areas*] and small and medium scale farmers, not only because of the expensiveness of the technological package [*GM seeds and chemicals*], but because there are products under IPR that destroy farmers' control. Local farmers are gradually being swept under because they do not have the control on their hands over what is produced and how it is produced. Therefore, there is a direct link between the loss of food sovereignty and the existence or imposition of GMOs in agriculture” (Interview 8).

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## Chapter 5. Conclusions

Recapitulating the key questions of this dissertation:

1. How has the South Africa agricultural sector been shaped by changes to the international food regime? And,
2. How do Intellectual Property Rights and the development of Genetically Modified seeds impact on South African farmers' food security and food security?

In relation to the above questions and the discussion put forward in the body of this dissertation, the following conclusions regarding this South African case study have emerged:

Firstly, the concept of 'Food Security' is widely used by those people who are affiliated to the agricultural sector and concerned with the issues related to this sector; however, there is a disconnection between the original conceptual definition and the use. Thus, when used as a descriptor at a national scale, this concept can be incorrectly assigned to individual households, when this may not be the case. Furthermore, government policy for dealing with Food Security at a national level as opposed to dealing with Food Security at a household level is not analogous. Therefore, to avoid demagoguery, broad reference to Food Security should be avoided, in policy documents, technical papers or speeches.

Secondly, technological changes have dramatically transformed the course of agriculture. On one hand, the Green and Gene Revolutions have increased national agricultural productivity, but on the other hand, this technocratic approach has produced a series of social and economic effects. As has been mentioned above and according to governmental data, despite national cultivated land increases, more than one third of the population is still vulnerable to food insecurity. Furthermore, the national agricultural sector has bifurcated into two oppositional systems, namely: a traditional, informal, small-scale system and a modern commercial, large-scale system. The modern large-



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scale system dominates the agricultural sector, discriminates against the traditional small-scale system and threatens their individual household Food Security.

Thirdly, national political and economic interests not Food Security concerns are the key reasons for Green Revolution and Gene Revolution promotion. The United States promoted the Green Revolution in South Africa to strengthen their strategic interests in the fight against communism in Africa during the Cold War, not to resolve Food Security concerns of the period. Furthermore, the United States' protectionist attitude toward its own agricultural sector, in contrast to the restrictive neo-liberal measures it advocated for internationally, triggered agricultural oversupply in the United States and national scarcity elsewhere, particularly in developing nations. By distributing this oversupply through an international Food Aid programme, again for political and economic reasons, not Food Security concerns, the United States disrupted international food supply and thereby prevented individual sovereign nations from implementing real measures to resolve national Food Security issues. As a result of these actions, the United States', post WWII, has definitively shaped the contemporary international food regime and thereby the food regime of supposedly sovereign individual nations, such as South Africa.

Fourthly, as a result of the increase in international trade between nations post WWII, supranational institutions were created. These institutions (such as the WTO), again for political and economic reasons, have been dominated by powerful nation states such as the United States. As a result of this domination, international agreements (such as the WTO's TRIPs) have consolidated the introduction of neo-liberal measures into the agricultural sector of South Africa (as with many other developing nations). These measures include amongst other things, the privatization of natural resources (such as water and genetic material), patents on living organisms and plant variety protection. These neo-liberal measures protect and promote large-scale commercial agricultural interests at the expense of the interests of the small-scale farmer and society in general.

Fifthly, as a result of global neo-liberalism, new actors, such as the Trans National Corporation (TNC) and global social movements, appeared in South Africa. TNCs were able, thanks to the gaps between national and international regulations, to gain control of whole sections of the national agricultural supply chain by consolidating their

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interests in chemical, fertiliser and seed (specifically GM seed) markets. As a result, they have gained unprecedented control and economic power. This power has enabled them to directly lobby and influence South Africa's governments to facilitate the introduction and intellectual protection of their agricultural products (particularly GM seeds). The economic interests of these Agri-TNCs and the national promotion of their products, particularly GM seeds, have further contributed to the bifurcation of South Africa's agricultural sector. It has also meant that traditional small-scale farmers have lost control of their traditional genetic resources, thereby being economically discriminated against and further undermining their food security. Social movements which have arisen during this period have drawn attention to the discriminatory nature of the economic and political control of South Africa's agricultural sector. As a way of highlighting the impact of this undemocratic control of the agricultural sector at a household level, the concept of Food Sovereignty was born. This concept, seeks to encourage local control of the market by individual households and to demand that their traditional rights be upheld and respected. As a concept, Food Sovereignty is currently neither widely recognized nor widely utilized, but its adoption is recommended, in order to facilitate a transition toward a much needed democratization of the Agricultural sector.

Sixth and lastly, South Africa is a unique case study because of its racist legislation and distinctly segregationist history. (What is interesting to note is that this racism became firmly embedded as a consequence of the initial international relationships of the past five decades). The post WWII cold war relationship between the United States and South Africa, in spite of its racist legislation, and their subsequent mutual economic interests; played a key role in shaping South Africa's national policies on agriculture in line with those of the United States' neo-liberal approach.

Since the nineteen eighties, there has been continuity in the development and implementation of neo-liberal measures in South Africa, specifically in the agricultural sector, with the adoption and promotion of biotechnologies. Neo-liberal policies were easily introduced into the strongly state supported South African agricultural sector, which (due to Apartheid) was characterized by a legacy of racially unbalanced land distribution and state subsidies to large-scale, white owned, commercial farms.

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As at an international level, in South Africa, the introduction, expansion and protection of science-based agricultural technologies has been motivated for political and economic reasons, not by attempts to achieve national food security. Rather than encouraging the growth of traditional, informal, small-scale farmers; South Africa's NP and ANC governments have partnered with Agri-TNCs and have encouraged the growth of South Africa's commercial, formal, large-scale farmers. United States Agri-TNCs, in particular Monsanto, have viewed South Africa as a lucrative niche market and as 'a gateway into Africa'. As a result, it appears that the Agri-TNCs have become the major beneficiaries of South Africa's agrarian policies at the expense of the growth of the traditional, informal, small-scale farmers.

In terms of national level Food Security, South Africa appears to be food secure thanks to the technical advances in large-scale commercial agriculture. Strong state promotion of biotechnology in the commercial farming sector means that enough food can be produced to meet the consumption requirements of the entire population. However, in terms of household level Food Security, South Africa is a country in which access (to land, to farming knowledge, to genetic material, to incomes, to government support and so on) has been clearly denied to one population group in favour of another population group, thereby undermining their food security. This discriminated population group appears to have changed over time, as the lens has shifted from racial preconception to market orientation. Whichever lens is used however, it has consistently been the poorest families in rural and urban areas who have struggled to achieve household food security.

In terms of national Food Sovereignty, both South Africa's government and farmers have lost control of national resources and production over time. Traditional small-scale farmers have been the most negatively impacted and Agri TNCs have become the major beneficiaries during the last half century. This loss of sovereignty has occurred as a result of a long process, in which GM seeds and IPR protection represent the most recent change. Together, they have played a subversive role, squashing agricultural alternatives and reducing South Africa's access to one of its key agricultural inputs and most treasured resources, its seeds.

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## **Appendix 1: Interview schedule for key informants**

### **INTRODUCTION**

Can you tell me about the work that you do and the institution you work for?

How long have you been doing this work?

How does your work relate to GMO debate?

### **DEFINING FOOD SECURITY**

1. How do you see the South African agricultural sector?
2. What are the main challenges for SA agriculture? Specifically to commercial farmers and to small-scale farmers
3. Do you think that SA is food self-sufficient?
4. How would you define the term 'food security'?

### **GM CROPS**

5. Could you give a brief overview of the agro-biotech sector in SA?
6. What role(s) do GM crops play in the SA agricultural sector?
7. What are the key advantages of GM crops for producers both for commercial and small-scale farmers, specifically in SA? And what are the key disadvantages?
8. Does the organisation you work for have a particular position on GM? What is it?

### **FOOD SOVEREIGNTY**

9. Have you heard about the term 'food sovereignty'? How would you define it?
10. What do you think the fundamental differences between food security and food sovereignty are?

### **RELATIONSHIP BETWEEN GM CROPS AND FOOD SECURITY/SOVEREIGNTY**

11. How do you think GE crops impact on South African farmers' food security? How do you see the relationship between food sovereignty, food security and GE crops?

### **INTELLECTUAL PROPERTY RIGHTS (IPR)**

12. Have you heard about IPR over living organisms? Could you give a brief overview of the role that IPR play with regard to living organisms?

13. What do you think are the main implications of IPR over GE seeds for farmers (commercial and small-scale)? Advantages and disadvantages.
14. How do you think IPRs over living organisms impact on SA farmer's access to seeds?
15. What do you think are the main implications of IPR over GE seeds for biodiversity? Advantages and disadvantages.
16. How is traditional knowledge and seeds protected within the IPR system?

#### MAIN STAKEHOLDERS

17. Which do you think is the role of the following organizations/institutions with regard to IPRs especially in terms of living organisms? What should their role be?
  - a. WB, IMF, WTO
  - b. Agribusiness corporations
  - c. State
  - d. Farmers (commercial and small-scale)

#### FUTURE OF GM CROPS

18. How do you see the future of GM crops, IPR and food security/sovereignty?