EFFECT OF CROP PATENTS ON SMALL SCALE FARMERS IN KENYA

Submitted in partial fulfilment of the requirements of the Bachelor of Laws Degree,
Strathmore University Law School

By
Magenya Dione Vugutsa

[078488]

Prepared under the supervision of

Dr Isaac Rutenberg

26/01/2017

Table of Contents

CHAPTER ONE

PROPOSAL

Introduction

Agriculture innovation in Kenya is shifting from the public sector to the private sector through the research in the use of recombinant DNA techniques to develop new plant varieties.[1] Consequently, these biotechnology companies secure their investments through the patent framework. Most farmers in Kenya are small scale farmers, who play an important role in conserving local plant genetic resources. Restricting farmers on the free access to improved seeds will essentially decrease global biological diversity.[6]

Achieving food security is one of the major development objectives for Kenya. According to the World Bank, global food production will have to double by 2050 to meet the demands of the growing population.[7] Patenting of biotechnology is however resulting to significant changes in how agricultural innovation occurs, who controls food in the country and how it will be paid for.

---

[1] Jayashree Watal, C:200 I) Intellectual Property Rights in the WTO and Developing Countries Kluwer Academic Publishers (Ist Edition)
[6] Institute of Economic Affairs and Society for International Development (2001). Kenya at the Crossroads: Scenarios For Our Future, Nairobi, Kenya and Rome, Italy.
[7] MOARD, Kenya Food Situation Reports 1990-2000.

For most of history in Kenya, seed innovation has been a freely shared public good. National agricultural research laboratories produce in seed technology that is distributed through various public channels in the country. With the introduction of plant patents in Kenya, research, control and access to seeds by the public is bound to shift towards the private sector.

Patents on crops will reduce farmers' access to seed and genetic resources. Seeds will become more expensive, due to royalty fees charged by the patent owners. Once a patented variety of seed is planted, farmers could be forced by companies to purchase new seeds every year, and penalised if they save seeds. Patented seeds sold as a package with fertiliser, pesticides and herbicides will further increase dependence on corporations.[9]

This dissertation aims to analyse the need for better protection given to indigenous farmers while balancing intellectual property issues.

Statement of the problem

The social issue that motivated this dissertation is food insecurity in Kenya and how the patent regime can help solve this. This paper seeks to analyse the effect of patenting genetic resources in plants by limiting farmers' free access to these resources. I will address the morality behind privatization of life forms by looking at the key incentives behind patenting which essentially is inventors being granted monopoly on their inventions and in return making their invention available to society and the patent regime used as an incentive for further innovation.

I will also look at the present intellectual property regime in Kenya that protects plant genetic resources from being monopolised by foreign biotechnology companies and the recommendations that could be implemented to prevent global markets from swallowing our domestic markets.

Kenya is a signatory of the TRIPS agreement which provides for patents in section 5.

Article 27 (2) states that:

"Members may exclude from patentability inventions, the prevention within their territory of the commercial exploitation of which is necessary to protect *ordre public* or morality, including to protect human, animal or plant life or health or to avoid serious prejudice to the

[9] Hon Nakitare Private Members' bill barring introduction of GM into Kenya, 2004

environment, provided that such exclusion is not made merely because the exploitation is prohibited by their law."

Article 27(3) states that:

"Members may also exclude from patentability: plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and microbiological processes. However, Members shall provide for the protection of plant varieties either by patents or by an effective sui generis system or by any combination thereof."

These provisions provide a 'loophole'[10] by allowing member states to exclude some plants or biological processes from the scope of 'patentable subject matter' under section 5. To do so states ought to 'provide for the protection of plant varieties either by patents or an effective *sui generis* system'.[11] TRIPS does not contain specific standards as to what constitutes an effective *sui generis* system, nor does it mention the International Convention for the Protection of New Varieties of Plants (UPOV).

Kenya is not obliged to provide for the protection of plant varieties under patents nor to comply with UPOV provisions, instead, it may develop its own *sui generis* system of protection.[15] Developed countries such as the U.S are however applying unilateral pressure to force developing countries to go beyond the TRIPs standards in order to safeguard the interest of their multinational corporations.[16]

The first international IPR agreements signed by Kenya were the Paris Convention for the Protection of Intellectual Property (1883) and the Berne Convention for the Protection of Literary and Artistic Works (1886). Kenya became a signatory to these agreements largely because of colonization. Kenya started patenting life forms in 1989 through the Industrial Property Act.[17] One of the reasons for enacting the Industrial Property Act was that Kenya had plant innovations and needed to protect them from exploitation from unauthorized third persons.

---

[10] "*Beans, beans, the patented fruit: the growing international conflict over the ownership of life*"**,** Erin Donovan, Loyola of Los Angeles International and Comparative Law Review.
[11] Article 27 3 b.

[15] TRIPS Article 27
[16] www.ip-watch.org/weblog/wp-content/uploads/.../egypt-biopiracy-section-11.doc
[17] Chapter 509, Laws of Kenya.

Globalisation and the growth of the IPR regime led to an agreement between WIPO[18] and the WTO[19], which led to the drafting of TRIPS, which epitomizes the implementation of national treatment and minimum standardisation of IPR on all WTO members. In this dissertation, I shall analyse whether it is conceivable to allow farmers open access over genetic resources while establishing private property rights for improved products based on those resources. I will analyse how a blanket international IPR regime does not satisfy Kenya's development needs, as it impedes development, prevents capital accumulation and increases indebtedness.

Justification of study

This Research is justified on the basis that although biotech crops promise to produce higher yields, they will have significant negative effects on organic farming and small scale farmers in Kenya. Patents do not exist in a vacuum, they are influenced by dynamic social and economic circumstances which are different in every country. Without considering the diverse social and economic circumstances of developing countries, these international IPR laws seem like a product of western legal supremacy that view a product worth protecting only if 'capital and technology' have been imparted in it. It delineates an association between Third World debt and intellectual property rights imposed by the few large foreign biotechnological companies. It is therefore necessary to provide considerable policy space to define national laws that govern patenting of biotech crops in Kenya.

Statement of objectives

The general objective of this research paper is to examine the national and international regulatory dimensions of Kenya's crop patent laws and policies. The specific objective of the paper is to raise the key emerging issues with regard to Kenya's approach to patenting biotech crops.

Research question

Can Kenya's national crop patent laws be varied from industrialized countries' patent laws so as to cater for sustainable food security in Kenya as a developing country?

Hypothesis

Measures have to be taken by the state to achieve food security in the country subject to Article 43 and 21 of the constitution. To promote food security through intellectual property rights, stringent domestic intellectual property legislation should be adopted hence creating

[18] World Intellectual Property Organisation, founded through the two 19th century agreements.
[19] World Trade Organisation.

monopolies over living organisms and processes.[22] This will give Kenya the sovereignty to adopt internal policies with respect to ethical aspects of biotechnology.

Theoretical framework

Among other theories of law, this research paper is centred on classical liberalism and utilitarianism. The right conferred to the owner of a patent is the right to exclude. Economist and moral philosopher Adam Smith created a classical theory of economics that has been applied to property law. The theory states that the expectation of profit from improving one's stock of capital rests on private property rights, and on the belief that property rights encourage property holders to develop property, generate wealth, and efficiently allocate resources based on the operation of the market.[23] The patent system, in effect, "produced the incentive to disclose inventions and the free economic environment which encouraged their production."[24]

To receive patent protection in Kenya requires that the invention meet the statutory requirements of subject matter and utility, novelty, and non-obviousness.[26]The subject matter and utility requirement has traditionally played a critical role in determining the patentability of proposed inventions.[27] As a result, disputes about proposed inventions are rooted in utilitarian arguments.

Utilitarian theory is an ethical doctrine according to which the moral worth of an action is determined by its contribution to overall utility. It is a form of consequentialism that questions whether the ends of an action justify its means. Inventions that on balance do not benefit society should therefore be rejected.[28]

The Lockean 'labour justification theory'[29]justifies the strengthening of patents. In his theory, Locke stated that the allotment of property by an individual and their entitlement to profit from it was acceptable provided they used the required amount of labour[30] and that 'there is

[22] Hettinger, 269. At 302: the "mistaken view that only human labour creates value (and that) genetic material is worthless
[23] Paul Blunt, Selective Breeding and the Patenting of Living Organisms (1998).
[24] Gert Matthijs, The European Opposition Against the BRCA Gene Patents, (2006).
[26] David Blumenthal et al., Data Withholding in Genetics and the Other Life Sciences: Prevalence and Predictors, 81 ACAD. MED. 137, 145 (2006)
[27] Joan Robinson, THE ACCUMULATION OF CAPITAL 87 (3d ed. 1969)
[28] Diamond v. Chakrabarty, 447 U.S. 303 (1980)
[29] Derived from Chapter V Book II of the Two Treatise of Government (1690) where he was forced to find an argument based in natural law that could justify the existence of private property, without betraying the commons, thus forming a natural rights theory on property see Ch 3 PF Drahos, (1996) A Philosophy of Intellectual Property Right***s***, Aldershot: Dartmouth Publishing Company
[30] *Ladbrooke Football Ltd v William Hill* (1964)

sufficient, and as good, left in the commons for others'. This falls under natural rights theory of property, which today is considered particularly applicable to intellectual property. There are defects in this justification of patent laws in light of the fact that the principal beneficiaries are not the 'labourers' but the large biotechnological companies.

The Agreement on Trade –Related Aspects of Intellectual Property Rights. (TRIPS) sees Intellectual Property Rights primarily as 'economic or commercial rights' which is supported by economic or utilitarian justification theories[32]. Clearly this natural human rights based approach is not the driving force behind strengthening crop patents.

Economic or utilitarian theories support the strengthening of Intellectual Property Rights on the basis that people respond positively to incentives and reward[34]. This theory argues that if profit is to be made from abstract objects which are 'non – rivalrous'[35] in their consumption and can be reproduced at minimal expense, then 'they have to be locked up in some way, at least temporarily'.[36] This led the economists to conclude that the best way to ensure the continuation of creativity, innovation and adequate capitalist investment to facilitate marketability of intellectual products to potential users, was through the creation of IPR which accords legal protection of their property rights afforded by domestic and international laws.

The inquiries into whether and how an invention may "benefit society" are however very necessary. The basis of this is on the dynamic economic, social, cultural and political environment.

Literature review

Agriculture is very important in Kenya as 75% of the Kenyan population is dependent on agriculture for food and income. Agriculture contributes 26% to the Gross Domestic Product (GDP) and 60% to foreign exchange earnings.[38] Kenya's population is however high in proportion to its arable area with only about one third of the total land area being agriculturally productive. This has resulted to an urgent need for technological change to enhance food production and to alter the course of widespread poverty, hunger, and

[32] ch 1 Drahos, (1996) ***A Philosophy of Intellectual Property Rights***, Aldershot: Dartmouth Publishing Company
[34] p5 Drahos, (1996) ***A Philosophy of Intellectual Property Rights***, Aldershot: Dartmouth Publishing Company
[35] i.e. ideas, music, books etc can be shared by many at the same time without devaluing the original, unlike real property that can in essence only be used by one person at one time
[36] p 6 Drahos, (1996) ***A Philosophy of Intellectual Property Rights***, Aldershot: Dartmouth Publishing Company
[38] Nyangito, H. and J. Okello. (1998). Kenya's Agricultural Policy and Sector Performance 1964 to 1996.

starvation. Most investments in biotechnology in Kenya are now focussed on improving agriculture.

Following the adoption of the TRIPS Agreement in Kenya, debates concerning the contribution of IPRs to economic and social development have become much more pronounced. Under the provisions of the Act, biotechnology innovations are patentable. The controversy arises with the perception that IPP restricts access to seed by farmers. Provision for biotechnology patents is seen as advantaging foreign biotechnology firms at the detriment of small scale farmers.

The TRIPs Agreement recognizes the need of maximum flexibility in implementing patent laws in ways that enable developing countries to create "a sound and viable technological base."[39] It contains several provisions that give countries the flexibility to grant exceptions to patent rights under certain circumstances, including broad authority in Article 30 to grant exceptions when the interests of the patent holder will not be adversely affected and authority in Article 31 to provide for compulsory licenses, subject to some conditions, when the patent holder's interests are affected. Article 27.3(b) permits countries to exclude plants and animals from patentability altogether, provided an alternative sui generis system of protection is provided[40]. The TRIPs Agreement only established minimum standards for adoption of patent systems by WTO members and left considerable flexibility to tailor the system to local needs.

The Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) provides that WTO members should protect intellectual property rights (IPRs) through national legislation. This however imposes developed country standards of IPRs on developing countries without considering their cultural values, economic, technological, scientific and social development levels.

Kenya is a member of many international organizations and has ratified a number of instruments that have implications on crop patent regulations including the WTO Agreements the Convention on Biological Diversity (CBD) and the Biosafety Protocol[41].

---

[39] R.L. Paarlberg, 'Governing the GM crop revolution: Policy choices for developing countries', Food, Agriculture, and the Environment Discussion Paper 33.
[40] 'Towards a Liability and Redress System under the Cartagena Protocol on Biosafety: A Review of the Kenya National Legal System', *East African Law Journal*, (2004).
[41] United Nations Conference on Environment and Development: Convention on Biological Diversity - Done at Rio de Janeiro, June 5, 1992.

A copyrighted movie remains the same movie, but when food becomes a patentable subject matter, it stops being food. Of course, you can eat patented rice the same way you can consume its unpatented cousin but unlike an iPhone, everyone needs food for survival. Food property rights allow those corporations which hold food patents a guaranteed portion of profits from guaranteed purchase. The same way, patentability of genetically modified crops confers monopoly rights over life forms and life itself for commercial exploitation. Patents may be appropriate for protecting genuine inventions, but are inappropriate applied to life forms, living processes, genes and traits, which are forms of discovery at their best. Granting patents on life encourages bio piracy which is the theft of genetic resources and traditional knowledge belonging to local communities.

Most of the patents from staple foods originating from developing countries but now grown globally do not involve prior informed consent from communities and there is no benefit sharing from commercial gain. These patents frequently end up being owned by corporations. This erodes the rights of farmers, indigenous peoples and local communities, depriving communities' access to resources they have nurtured and conserved over generations.

There is no official Kenyan policy document addressing the issue of genetically modified crops. There are only draft guidelines and policies. There is however reference in national development plans to the role that new technologies can play in addressing food security problems and in spurring economic growth

Within the context of the UNEP-GEF project, a draft for a comprehensive policy on biotechnology and biosafety was developed in 2003 but it has not been adopted. The main objective of the draft policy is to provide a framework for safe development and application of biotechnology. The policy does not specifically address GMOs. It deals with it in the general context of biotechnology development[44].

The Convention on Biological Diversity provides the framework for the development of biotechnology in a manner consistent with conservation and sustainable use of biological resources.[45] It recognises the need to ensure equitable allocation of ownership rights and intellectual property rights to biotechnology by explicitly spelling out the rights of states to their natural resources and the rights to intellectual property rights for products of biotechnology. There is also need to consider the implications of the Food and Agriculture

[44] Cartagena Protocol on Biosafety to the Convention on Biological Diversity, 2000.
[45] Draft Biosafety Bill, September 2003.

Organization's International Treaty on Plant Genetic Resources for Food and Agriculture, which provides for Farmers' Rights, a genus of intellectual property rights. Given that Kenya is a member of the International Convention for the Protection of New Varieties of Plants (UPOV Convention), this should inform policy directions in biotechnology research and development[46]. Laws on crop patents in Kenya should not be predicated on international rules rather than on national development imperatives.

Research Methodology

I will use secondary sources of material for my research. This includes:

a) Library research

b) Internet searches

c) observation

Chapter Breakdown

Chapter 1: The Proposal

[46] NCST No. 41. 2003. Regulations and Guidelines for Biosafety in Biotechnology for Kenya.

This shall be the introduction to the dissertation. It states the objective and scope of the dissertation.

Chapter 2: Patents, patent rights and the bio patent debate

This chapter gives an introduction into what patents are and the rights accruing to an inventor upon his being granted a patent. It will then delve into the bio patent debate, highlighting the arguments that have been put forward for and against the patenting of crops.

Chapter 3: Theoretical Framework

I shall discuss the various arguments that have been presented with regard to patenting crops and the effect it has on small scale farmers and organic farming in third world countries.

Chapter 4: National and International dimensions regulating crop patents in Kenya

I shall analyse how international IPR regulations interact with our domestic laws to protect intellectual property rights as well as farmers' rights and biodiversity.

Chapter 5:

Recommendations and conclusion

This chapter shall analyse the need for a balance between protecting breeders' rights as well as considering farmers' rights.

CHAPTER TWO

PATENTS, PATENT RIGHTS AND THE BIO-PATENT (PATENT OF CROPS) DEBATE

Introduction

In this chapter, I shall discuss what Patents are, the rights that accrue to a patentee once a patent has been granted to him by the patent office, and lastly I shall delve into the Bio-patent debate. The purpose of this Chapter is to lay the foundation on which I shall then discuss the effect of crop patents on small scale farmers.

Patents and Patent Rights

Definition of patents

A patent can be defined as a set of exclusive rights granted by a government to an inventor or applicant for a limited amount of time (normally 20 years from the filing date). It can be said to be a contract entered into by an inventor and a government.

The government promises to provide the exclusive rights to the enjoyment of his or her invention in return for disclosing the invention to the general public. The Kenya Industrial Property Institute (KIPI) describes a patent thus:

"Patents offer inventors monopolies on their creation for specific periods, and thus providing incentives for research and development. Without the possibility of patent protection many people might not take the risks or invest the time and money involved in devising and perfecting new products"[52]

If the government does not encourage disclosure, an invention could as well be kept a secret forever.

Justification for the grant of patent rights

The reason for patent legislation has always been to induce the inventor to disclose knowledge for the advancement of society in exchange for a limited period of exclusivity. It has long been recognized that these rights are nothing more than tools to achieve public good. The patent system encourages inventors to share their ideas with the general public through disclosure to the designated patent office (which in Kenya is the Kenya Industrial Property Institute (KIPI)), and thereby advancing the general status of technology. The advancement is accomplished by encouraging innovation through giving the inventor the right of exclusive commercial use, and by encouraging competitors to design around the invention. Thus, the knowledge of the inventor is preserved for the benefit of society and future generations.

P. Naranayan[53] described the importance of the patent system. He stated that the exclusive rights granted to a patentee stimulate technical progress in four different ways. First it encourages research and inventions. Secondly it induces an inventor to disclose his discoveries instead of keeping them as a trade secret. Thirdly, it offers a reward for the expenses of developing inventions to the stage at which they are commercially practicable:

---

[52] Kenya Industrial Property Institute (2005) A Guide to Patenting in Kenya, KIP], Nairobi, pp 1-30.
[53] P. Naranayan (1990) intellectual Property Law Eastern Law House, India, pp 44 (1st Edition).

and lastly, it provides an inducement to invest capital in new lines of production that might not appear profitable if many competing producers embarked on them simultaneously.

However, patents do more than keep the creative wheel spinning. They are also a means of technological exchange. Each patent document describes a new aspect of technology in clear and specific terms and is available to anyone to read. As such, they are vital resources for entrepreneurs, researchers, academics, farmers and anyone who needs to keep up with developments.

History of Patents

The term "patent" originates from the term *patere* which means to lay open (to public inspection) and the term letters patent, originally denoted royal decrees granting exclusive rights to certain individuals or businesses.[54]

History demonstrates that patent protection followed the acquisition of technological capabilities and higher income levels rather than preceded it. Therefore, it is until a nation has developed a certain level of biotechnological capacity that gives it a competitive advantage in order to become concerned with its protection.[55]

In his journal, Joon Chang legitimately proposes that "it seems unfair to ask the modern day developing countries to behave to a standard that was not even remotely observed when the now advanced countries were at a similar or even more advanced stages of their development"[56]

David Vaver states that 'international corporate power has effectively curbed national sovereignty in the field of intellectual property policy.'[57] The threat of trade sanctions on such weak economies removes the benefit of protecting their economy and creating technological capabilities to concentrate on local demand to reduce poverty.

Shiva, Vandana, in her article, ***"The effects of WTO on Women's Rights"*** states that through 'industrialisation and colonialism'[58] the natural resources in the hands of the developing

[54] Schmiedchen and Spennemann
[55] In Britain patent laws established between 1790 – 1850, copyright 1709, trademark 1862 p 7"*Intellectual Property Rights and Economic Development- Historical lessons and Emerging Issues"* Ha – Joon Chang, Journal of Human Development, July 2001.
[56] p13 – Intellectual Property Rights and Economic Development- Historical lessons and Emerging Issues" Ha – Joon Chang, Journal of Human Development, July 2001.
[57] Intellectual Property: An Overview, David Vaver.
[58] Shiva, Vandana, "The effects of WTO on Women's Rights".

world became raw materials for the west, requiring 'human inventiveness' to transform them into a marketable commodity.

Patent application and registration in Kenya is traceable to the Patent Registration Act[59](Repealed), Chapter 508 of the Laws of Kenya. This statute was enacted in 1962 and provided for the grant of patents in the United Kingdom, which were subsequently registered in Kenya. The Registrar General, a department of the Attorney General's office, carried out registration of patents in Kenya.

The Industrial Property Act[61] which was the law governing patents, was enacted in 1989.It was later revised in 2001. Prior to 1989, Kenya's patent law was essentially a neo-colonial issue and was based on the United Kingdom's patent system[62]. Under the Parent Registration Ordinance 1933, for one to obtain patent protection in Kenya, one had to obtain a certified copy of *letters patentes* from the United Kingdom's patent office. The Kenyan office only registered patents that had been granted in the United Kingdom. The current law governing patents is the Industrial Property Act, 2001.

Scope of Patentability of biotech crops

Biotechnological patents involve patenting the altered physiology of the plant which is done through a biotechnological process based on its novelty, inventiveness and the sufficient effort expended in the process.

Patents in the field of plant biotechnology are given on the basis of inventions that satisfy the criteria for novelty, inventive step and utility or industrial applicability.[67] An invention has been defined under Section 21 of the Industrial Property Act as a solution to a specific problem in the field of technology. An invention may relate to a product or a process. The main dispute is that plants and seeds cannot simply be termed as inventions as they are not man made.

Section 21 of the Act also enumerates inventions that shall be excluded from patent protection. They are:

a. Discoveries, scientific theories and mathematical methods

[59] Chapter 508 Laws of Kenya (Repealed).
[61] Chapter 509, Laws of Kenya (repealed).
[62] Hannington Odarne, Patricia Kameri Mbote and David Wafula (September 2003), Governing Modern Agricultural Biotechnology ln Kenya and Implications for Food Security, Institute for Development Studies.
[67] Section 22 IPA 2001 requires that the invention be industrially applicable.

b. Schemes, rules or methods for doing business, performing purely mental acts or playing games.

c. Methods for treatment of the human or animal body by surgery or therapy, as well as diagnostic methods practised in relation thereto, except products for use in any such methods.

d. Mere presentation of information.

e. Public health related methods of use or uses of any molecule or other substance whatsoever used for the prevention or treatment of any disease that the minister responsible for matters relating to health may designate as a serious health hazard or as a life threatening disease.

Thus, any invention that does not fit within any of the above categories will be regarded as an invention under the Act and hence patentable. Section 22 of the Industrial Property Act states that an invention is patentable if it is new, involves an inventive step, and is industrially applicable.

The 1980 Supreme Court decision in ***Diamond v. Chakrabarty***, held that there was no objection to the patenting of genetically modified living organisms, provided that the protection has met the criteria of patentability.

A reasonable distinction has to be made in what constitutes an invention of man and what is a result of nature. The main contention is whether the feature introduced is novel and whether the process through which the variety has been gotten is novel.

In order for a plant to be eligible for protection, it must adhere to this test:

Novelty

Section 23(1) of the Act states that an invention is new if it is not anticipated by prior art. At the date of filling the application of registration for the crop patent, the biotechnological product or process should not exist before the registration.

In ***Fomento v. Mentmore***[68]the court held:

"On the contrary, if the information whether in documentary form or in the form of the invention itself, has been communicated to a single member of the public without inhibiting fetter, that is enough to amount to making it available to the public ..."

[68] [1956] RPC 87, CA.

Distinct

The plant variety must be recognizable from any other variety whose existence is a matter of common knowledge in any country at the time of filing such an application. There must be a significant degree of human creation above the previous art and it ought to be clear to a person of ordinary skill in that field. The relationship between the patented product and genetic resource must be studied in depth. Such patented plants must be distinct from the earlier plant in its characteristics

Patent examiners generally use these principles before granting a patent. These principles were laid down in ***Windsurfing International V Tabur Marine***[69], they are:

a) The court must identify the inventive concept embodied in the patent.

b) It must assume the mantle of the normally skilled but unimaginative addressee in the art at the priority date and impute to him what was, at that date, common general knowledge in the art in question

c) It must identify what, if any, differences exist between the matters cited as being 'known or used' and the alleged invention;

d) It must ask itself whether, viewed without any knowledge of the alleged invention, those differences constituted steps which would have been obvious to the skilled man or whether they required any degree of invention.

Uniform

The patented plant must be uniform in its fundamental character liable to the variety anticipated from its propagation. The patented plant's characters must remain unchanged after repeated propagation.

"Non-obviousness," "Inventive ingenuity", or "Inventive" Step

Section 24 of the Industrial Property Act states:

"An invention shall be considered as involving an inventive step if, having regard to the prior art relevant to the application claiming the invention, it would not have been obvious to a

[69] [1985] RPC 59, as quoted by William Cornish (2003) Cases and Materials on Intellectual Property Sweet & Maxwell, London. Pg. 163 (Fourth Edition).

person skilled in the art to which the invention pertains on the date of the filing of the application or, if priority is claimed, on the priority date validly claimed in respect thereof."

Even if an applicant's claim for an invention is technically novel, a patent can still be denied to the applicant if the applicant's subject matter is obvious. The purpose of forbidding patents on obvious technologies is to prevent a person from obtaining exclusive rights to what is effectively already in the possession of the public.

Industrial applicability or utility

Section 25 of the Act states:

"An invention shall be considered industrially applicable if, according to its nature, it can be made or used in any kind of industry, including agriculture, medicine, fishery and other services."

The technology must be useful and have utility in commercial, industrial, trade, or agricultural sectors. "Useful" means the invention must be of some, even if small, benefit.

Who may be granted a patent?

Patents are normally granted to four main groups of people:

1) Natural persons

A patent will be granted in respect of an invention, either to a single individual if he is the sole inventor or to two or more people if they are co-inventors, as a result of which they become joint owners of the invention.

Section 30 of the Industrial Property Act states that the right to a patent shall belong to the inventor. Further, if two or more persons have jointly made an invention the right t0 the parent shall belong to them jointly. The Act also states that the right to a patent may be assigned or may be transferred by succession.

2) Artificial or legal persons

These are mainly corporations or companies. An example would be where an individual invents a way of manufacturing a product and instead of patenting it in his own name, he forms a company to be the owner of the patent, and responsible for its exploitation.

3) Assignees of inventions

A patentee may assign the whole or any part of the patent rights. The assignee replaces the assignor and is entitled to his name being entered on the register of patents as the proprietor of the patent. The assignee can thereafter exercise all the rights of the proprietor of a patent.

4) The Government

Under section 17 of the Science and Technology Act[70], inventions made by scientists in research institutions established under the Act are patented in favour of the research institute and not the individual inventor. The government may however be said to be the owners of such inventions because such institutions are government agencies. Thus, inventions by Kenya Medical Research Institute, KEMRI) belong to the government.

Rights of a patentee

Section 53 of the Industrial Property Act provides for the rights and obligations of a patentee. It provides that a patentee or owner of an invention has the following rights:

1. To be granted a patent upon the fulfilment of the requirements of the Industrial Property Act.

2. After the grant of the patent, to exclude other persons from exploiting the patented invention, as provided for in Section 54 of the Act.

3. To licence out the patented invention as provided for under the Act.

4. To receive royalties as in the case of compulsory licensing.

Section 5-1- provides for the rights of the owners of a patent. It states:

"(I) The owner of the patent shall have the right to preclude any person from exploiting the protected invention by any of the following acts: When the patent has been granted in respect of a product (I) Making, importing, offering for sale, selling and using the product; or (ii) Stocking such product for the purposes of offering it for sale, selling or using the product:

(b) When the patent has been granted in respect of a process (I) Using the process; or (ii) doing any of the acts referred to in subsection (a) in respect of a product obtained directly by means of the process.

[70] Chapter 250, Laws of Kenya.

(2) The rights conferred on the owner of the patent under this section shall not apply to acts by third parties necessary to obtain approval or registration of a product from the Institute, for the purpose of commercialising the product after expiry of the patent."

Hence, no person may produce, sell or offer for sale, or even import a patented invention without the patentee's authority.

However, these rights are not unlimited

1. They only extend to conduct or acts done for industrial or commercial purposes. This does not include acts done for scientific research or experimentation. It will not be an infringement of a patentee's rights if one company uses the patented formula belonging to another company to see whether that product can be used for generating another plant variety

2. Compulsory licensing, or when the patents are mutually supporting that it would be impossible to work one patent without infringing another. This is the reason why in compulsory licensing, a government must pay sufficient royalties to the owner of a patented medicine because technically, the government is infringing the patentee's rights by producing a similar and more affordable product for its citizens.

3. Under Section 56 of the Act, the rights of a prior user limit a patentee's rights.

4. It must be noted that a patentee's right are limited to the claims that he made under the patent application. A patentee is therefore only protected for what he claimed when he was granted the patent.

In addition, a patentee has the following obligations:

a) To disclose the intervention to the patent office, when applying for a patent. The disclosure must be in a clear and concise manner, and if possible, diagrams of the invention and how it works must be provided. In addition, the applicant must indicate at least one method of carrying out the invention.

b) If the applicant has applied to any other foreign country or jurisdiction, and/or been granted such a patent, he must inform the patent office of this.

c) The applicant must pay any requisite fees as he may be directed by the patent office, for example for conducting searches.

d) To refrain from licensing or assigning his patent in a way that is prohibited by Section 69 of the Act, for example one that is harmful to the social and economic interests of Kenya.

The purpose of highlighting these rights and obligations is because they are the same rights that holders of bio patents have.

It will therefore be an infringement of a patent if patented seeds are not made available to farmers hence affecting the social and economic development in the country.

In Kenya, seed innovation is to a great extent a public enterprise and a public good. Farmers produce, save, and share improved seed. Agricultural research laboratories involved in seed innovation distribute seeds through public channels. An example is the Consultative Group on International Agricultural Research (CGIAR), which is sponsored by the World Bank and funded largely by donor countries. It has played a leading role in seed innovation, and a large number of its laboratories are exploring the use of modern biotechnology to solve Kenya's agronomic problems.

Kenya is rich in biodiversity. Farmers possess traditional knowledge and use traditional techniques to manage and develop new crop types and biodiversity conservation. These small scale farmers have played an important role in the conservation of plant genetic resources and the transmission of these resources to seed companies, plant breeders and research institutions. The question arises as to whether it is fair that these genetic resources be transferred freely while breeding activities contributed by developed nations are being rewarded with intellectual property rights.[71]

In Kenya, traditional farmers and indigenous people have the plant genetic resources and traditional knowledge monopolized by private companies under patents without receiving their equal share of benefits from their contribution to these genetic resources.[72].

These concerns led to the adoption of two United Nations binding international treaties, the Convention on Biological Diversity (CBD) , the first global agreement on the conservation and sustainable use of biological diversity, signed at the 1992 Earth Summit in Rio de Janeiro, and the International Treaty on Plant Genetic Resources for Food and Agriculture

---

[71] J. BARTON, *Acquiring Protection for Improved Germplasm and Inbred Lines*, in:F.H. Erbisch, and K.M.Maredia, (Eds.), Intellectual Property Rights in Agricultural Biotechnology, Biotechnology in Agricultural Series, No.20, Cab International, 1998, Wallingford-New York, p.20

[72] P. C. MARIN, *Providing Protection for Plant Genetic Resources . Patents Sui generis System and Bio-partnerships*, Kluwer Law international, 2002, New York, p.1

(PGRFA), adopted on 3 November 2001 under the auspices of the FAO, which recognizes the enormous contribution that farmers and their communities have made and continue to make to the conservation and development of genetic resources.

The Bio-Patent Debate (Patenting Of Life Forms)

A debate that has been raging for quite a while is whether life forms should be patented. The argument has been whether genetically modified organisms should be patented since such organisms are products of nature. It is therefore argued that no one should be able to lay a claim on a specific plant just because they have made an improvement on it.

Patents affect the holder as well as the general public. There is a complexity of moral and ethical concerns that cloud the importance of agro patents in society. It can be argued that there is an apprehension that in permitting biotechnology patents on plants, it may lead to privatization of all that is natural as long as it can fit into the "patentable" qualities.

It is argued that Intellectual Property Rights are fundamentally a western concept, established through the development of capitalism which in turn encouraged individualism through alienation and a desire to fulfil needs which could only be met through innovation and technological progress.[73] Many communities in Kenya practise communal ownership of property and therefore consider "copying" and the sharing of expressions as a signal of respect and status rather than the infringement of an IPR[74] as propounded by TRIPS.

Developing countries are suppliers of almost all genetic resources used in research but do not have the resources to develop along the line of IPRs. Recent statistics demonstrate that developed countries own 95% of the world's patents and the vast majority of patents are in the developing world.

It could be argued that 'intellectual property has become the new wealth of the late twentieth century'[75]. This has encouraged the main beneficiaries of intellectual property to seek stronger IPR to the developing nations in order to increase their financial reward. To the IPR holders, stronger IPR is something to be thankful for.

---

[73] Vaver, David, *Intellectual Property: An Overview*

[74] p 15, ***Study on Intellectual Property Rights, the Internet, and Copyright***, Alan Story: CIPR (2002), Integrating Intellectual Property Rights and Development Policy

[75] p4 Vaver, David, ***Intellectual Property: An Overview***

Patents are likely to create greater wealth in countries that have the internal environment to support their development and commercial exploitation. For developing countries patents can be unfavourable to achieving the targets of 'catching up' with the more industrialised nations.

TRIPS does not address the broader social issue which is access to genetic resources, it rather focusses on securing the financial interests of biotechnology companies. It does not acknowledge that different countries have unequal capabilities in the market and in providing institutions for the state to regulate the market. TRIPS further erodes national sovereignty by reducing the ability of national governments to protect their local market. The sweeping implementation of IPRs through TRIPS paying little heed to size, technological capabilities or Gross national Income, suggests the attainment of such advantages will vary greatly between different developing countries.

Article 7 of TRIPS provides that such rights should be protected to the mutual advantage of inventors and users and the technical knowledge used in a way that is conducive to social and economic welfare. This provision seems impractical because the IPR regime enforced by TRIPS is too advanced for Kenya's technology base and will prevent the country from climbing the "technological ladder. For instance, Kenya gets most of its technological capabilities through imitation, reverse engineering and exclusive compulsory licensing, all of which are intensely denied by TRIPS.

Different communities in Kenya have different impressions of what comprises food and that discernment is critical to successful interventions in making food accessible and affordable. Some food crops such as sweet potatoes are connected with starvation and can only be consumed during famine, when there is no other option as food. Different communities eat different foods as part of their culture and will be extremely hesitant to eat other types of food. These factors have not been considered in the development crop patent laws in Kenya.

An example is the GM sweet potato which is considered by many communities a famine crop. Another remarkable point is the practice of saving seed from the harvest for planting the next season. While farmers progressively buy hybrid seeds from seed vendors for sowing, there is no distinction between seed for planting and seed for food in many parts of Kenya. The result is that GM seeds brought in as food or feed may end up on farmers' fields. The probability of this happening is significant given that Kenya experiences interminable food shortages and receives food aid from donor countries.

During my research, I took into account these perspectives that I thought are essential in order to have an effective patent framework in Kenya:

1. Cultural contrasts in attitudes towards patenting of life forms in Kenya.

It can be argued that TRIPS is based on proprietarian Intellectual Property Rights which portrays the western individualistic perspective of ownership. There are principal contrasts between indigenous and Western conceptions of rights in knowledge and nature. For a long time, ideas on farming in Kenya have been held as public goods. There is no provision in TRIPs that recognizes communal intellectual property interests. The preamble to TRIPS provides that intellectual property rights are private rights. This excludes knowledge held by village farmers and by indigenous people.

2. How crop patents actually meet the needs of the nation in terms of economic development
3. Do genetic resources qualify for patent protection?
4. Does the patent system in Kenya take into account farmers' rights?

CHAPTER 3

THEORETICAL FRAMEWORK

At the World Food Summit held in Rome in 1996, 186 countries, including Kenya pledged their efforts to achieve "food security for all with a prompt view to reduce the number of undernourished people to half their present level no later than 2015."[76]

[76] http://www.fao.org/wfs/index_en.htm.

The growth of agricultural production in Kenya has declined gradually since the mid-1980s and more quickly in the past five years. It declined from 4.6 per cent in 1960 to less than 1 per cent in the 1990s. Agriculture's contribution to Gross National Product dropped from 35 per cent to 28 per cent during the same period.[77]

This poor performance of the agricultural sector has been credited to wrong policies especially controls on agricultural production and marketing[78], inappropriate land tenure arrangements, market failure[79], increased need for and cost of agricultural inputs such as fertilisers, pesticides and seeds[80] and unfavourable climatic conditions.

Kenya's agricultural policy aims at internal self-sufficiency, maintaining sufficient levels of strategic food reserves and generating additional supplies for the export market. The country has however largely depended on food imports and food aid to satisfy local demand. This is due to drought and the increase in human population which is not proportional to agricultural production.

Article 27 of TRIPS allows patents for 'any' products and processes, widening the scope of patentability to plant varieties and pharmaceuticals provided they are 'new', 'involve an inventive step' and are 'capable of industrial application'[81]and if they are, a patent of up to twenty years can be granted.

States are therefore required to adopt stringent domestic intellectual property legislation creating monopolies over living organisms and processes.[82] This gives the states the sovereignty to adopt internal policies with respect to ethical aspects of biotechnology.

The object behind intellectual property rights is to reward innovativeness and to promote creativity and enterprise by offering those who invent a right to exclusive use of their invention. Patents enable holders exclude others from marketing and using their invention for

---

[77] Republic of Kenya (2000) Rural Poverty Eradication Strategy Paper
[78] H. Nyangito & J. Okello. (1998). Kenya's Agricultural Policy and Sector Performance 1964 to 1996. IPAR Occasional Paper.
[79] Robert H. Bates, Beyond the Miracle of the Market : The Political Economy of Agrarian Development in Kenya, Canada, Cambridge University Press (1989).
[80] Institute of Economic Affairs and Society for International Development (2001). Kenya at the Crossroads: Scenarios For Our Future, Nairobi, Kenya and Rome, Italy.
[81] Section 5, Article 27.1, TRIPS, source: p569, Christie & Gare, (2004), *Blackstone's Statute on Intellectual Property*, 7th Edition, Oxford: Oxford University Press

[82] Hettinger, 269. At 302: the "mistaken view that only human labour creates value (and that) genetic material is worthless

a stipulated time unless otherwise given permission. This in turn creates a monopoly of the crop within the market.

Problems associated with implementing patents on crops in Kenya:

The enforcement of TRIPS has resulted to an increase in the costs of implementing an intellectual property system. Kenya has to contend with paying inflated prices for consumer goods on the existing protected products and some newly protected ones[83]. Money is needed to set up an institutional framework to deal with crop patents.

Before TRIPS, giant agricultural multinationals, such as the Rockerfeller Foundation were in charge of the marketing and financing the "Green Revolution" in the 1960s, which changed Third World agriculture from sustainable organic bases to totally non sustainable chemical farming[84]. The result is third World countries being bonded into permanent debt.'

The consequent production and patenting of genetically modified 'food' such as "Round-up ready" soy and "golden rice" that require the very chemicals they want to sell are sold at increased prices, which the farmers are compelled to buy because of IPR and the chemical shift in agriculture. When the crops fail due to a disease outbreak, farmers are unable to recover funds from such institutions that forced them into 'monocultures'. India encountered a threefold leap in borrowing from the World Bank over this period.

Through the continued implementation of TRIPS together with the withdrawal of UPOV[85] clause retaining the farmer's rights to save the patented seed they purchase for reuse in 1991, Kenya faces greater impoverishment through global patent enforcement and bio- piracy.

Article 1 effectively imposes a 'positive obligation'[86] on all members of WTO to comply with the minimum standards of IPR required by TRIPS[87] and are "free to determine the appropriate method of implementing the provisions of this agreement within their own legal system and practice".[88]

---

[83] The adverse effect of widening the scope of IPR in these newly protected areas and its impact on the debt crisis will be examined next

[84] "*The new Global Brahmanism and the meaning of the WTO Protests: An Interview with Dr. Vandana Shiva*", Forum Social Mundial 2001, Biblioteca das Alternativas, *Publicado na revista* ColorLines, Summer 2000 (v.3, n.2)

[85] The International Convention of the Union for the protection of New Varieties of Plants

[86] D Gervais, the Trips Agreement: Interpretation and Implementation.

[87] Although many LDC's and developing countries and even LDC's have been bullied into 'TRIPS plus' bilateral agreements

[88] Article 1, TRIPS

This creates a challenge for Kenya as a member of WTO to determine the best way to establish an IPR regime that will suit their level of technology and their economic needs. For example, if the IPR system is too basic i.e. with no patent examination; lack of legal inquiry into infringement and so on, Kenya risks the potential of further abuse from large corporations creating monopolies or other anti-competitive practises that will go unchallenged.

Kenya's indigenous biotechnology capacity is so low, therefore, the guarantee of crop patents promoting invention is essentially an empty promise.[89] It is the existing biotechnological capacity that actually decides the degree to which Kenya can assimilate and apply foreign technology[90] CIPR and other studies conclude that the most 'distinctive single factor determining the success of technology transfer is the early emergence of an indigenous technological capacity'.[91]

Developing countries like Kenya cannot create adequate levels of indigenous technological capabilities required to help economic development and reduce poverty not to mention assimilate advanced technology from developed countries. In addition to that, in In compliance with TRIPS, Kenya as a member of WTO has had to forsake its norms and values of 'ecological regeneration', traditional knowledge and communal ownership, and place the control, supply, price and ultimately their lives in the hands of a few biotechnological companies who now own the IPR on seeds.

Broad patent protection afforded by TRIPS raises the prices of seeds, for example, the patent granted on 'neem' seeds. Kenya must sustain these costs for longer costs as patents are granted for longer under TRIPS hence making it dependent upon the 'affordable' varieties developed by the IPR holder but are still prevented from saving and reusing the seed.

When a farmer is suspected of reusing or saving seed, TRIPS reversal of the burden of proof under Article 34 unconscionably shifts the unbalanced legal costs on to the acclaimed Third World infringer to prove their innocence.

The financial effect of these unavoidable and ever increasing IPR payments for Kenya can be summarised as follows: increased royalty and licensing payments prevent capital accumulation which is essential to the country's ability to invest in, and so develop

[89] Article 7
[90] Ch 1, CIPR 2002
[91] Ch 1, CIPR 2002

indigenous technological capabilities sufficiently adequate to absorb the transfer of technology embodied in the products we import to further our domestic development (especially implied knowledge which is not effectively transferable).

However, inferring from economic and technological divergence and depreciation of domestic currencies in Kenya as a third world country for biotechnological companies, the cost of filing patents in the Kenya are insignificant, yet the comparative cost for a Kenyan peasant farmer, scientist or company to file a patent to protect their seed or process in the developed countries would be incomprehensible. This legal exemption cannot be utilized to limit further exploitation of indigenous crops.

Such exorbitant but equally unavoidable costs forced through TRIPS can only expand the borrowing requirement of Kenya. As Shiva concludes she proposes that the implementation of a stronger IPR regime through TRIPS amounts to a "transfer of extra funds as royalty payments from the poor to the rich that will exacerbate the current third world debt crisis ten-fold."[92]

The 'IPR system seems to be evolving in a way that favours the advanced country producers over everyone else'[93] yet it should be wielded to reduce debt, not increase it. Between 1991 and 2001, the net US surplus of royalties and fees (principally relating to IP transactions) increased from $14 billion to over $22 billion[94], while the developing countries experienced a deficit of $7.5 billion on royalties and licence fees in 1999[95]. Developing countries like Kenya are therefore the net importers and the net losers of intellectual property, whilst the large biotechnological companies in developed countries remain the biggest beneficiaries.

Examples of Biotechnological Crop in Kenya

The Insect Resistant Maize for Africa (IRMA)

The Insect Resistant Maize for Africa project started in 1999. It was jointly implemented by Kenya Agriculture and Livestock Research Organization (KALRO) and the International Maize and Wheat Improvement Centre (CIMMYT) with funding from the Syngenta Foundation for Sustainable Agriculture. The aim of the project is to increase maize production which is a staple food in Kenya and enhance food security through the

[92] Shiva, Third World
[93] p15, Chang
[94] US Department of Commerce, Bureau of Economic Analysis, cited in Ch 1 CIPR 2002
[95] cited in CIPR 2002, ***"World Bank (2001b) World Development Indicators",*** World Bank, Washington DC, Table 5.11, Source: www. worldbank.org/data/wdi2001/

development and deployment of insect resistant maize that is adapted to various agro-ecological zones in Kenya. The new variety of maize is expected to be developed with Bt. genes which is naturally occurring bacteria that produces a protein toxic to certain types of insects. The genes in this case are harmful to the local population of stem borers. Bt. maize is expected to close the wide food deficit gap in Kenya.

The project intends to come up with procedures for disseminating the technology to farmers and the assessment of the socio-economic impacts of the new maize variety in Kenyan agricultural systems.

To guarantee that Bt. maize is affordable and benefits the resource-poor farmers, the technology will encase open pollinated seed varieties and farmers will be allowed to recycle the seeds on the farm without significant drop in production. Cross-pollination between farms with Bt. maize and adjacent ones with local varieties will be possible. Farmers will therefore be able to maximize benefits of the technology at no extra cost. This however brings the risk of contamination of non-GM crops, an issue that the Kenya Institute of Organic Farmers has raised.

Public participation through stakeholder meetings have been held at each stage from the conceptualization of the project to the current stage. They have included farmers, policy makers, scientists, consumers, representatives from the general public and regulators.

CHAPTER 4

National and International dimensions regulating crop patents in Kenya

The Industrial Property Act No. 3 of 2001 aligns Kenya's industrial property law to TRIPS' provisions. Under the provisions of the Act, biotechnology innovations are patentable. This is important when considered together with the perception that Intellectual Property Protection limits access to seed by farmers. Patents are therefore seen as benefiting foreign biotechnology firms and not the poor small scale farmers.

Several initiatives have been taken up in recent years to address some of the IPR-related problems in Kenya. The 2002 report of the Commission on Intellectual Property Rights

stands out.[96] It provides a largely balanced account of the advantages and disadvantages of intellectual property protection in the present Kenyan intellectual property framework.

The grant of intellectual property rights to innovations has implications for access to those innovations. The proprietor has legal protection against unwarranted infringement by non-owners. Non- proprietors of the new variety of plant have to negotiate with the rights' holder to access the resources.

If ownership and control rights are given to the innovator of a biotechnology product, the issue of access for the person who nurtured the raw material must be addressed. This raises the issue of fair and equitable sharing of benefits arising from the innovations with the aim of protecting the rights of all actors.

Following the adoption of the TRIPS Agreement, debates concerning the contribution of IPRs to economic and social development have become much more pronounced. This is due to a number of converging factors:

1. The TRIPS Agreement commits Kenya to raise its standards of intellectual property rights protection.
2. The TRIPS Agreement makes few exceptions for the smaller, economically weaker countries, including the least developed countries. This limited differentiation has led to major controversies such as the controversy concerning access to seeds by poor small scale farmers.
3. The issue of increasing appropriation of knowledge to the public through intellectual property rights.

The draft *Regulations and Guidelines for Biosafety in Biotechnology for Kenya,* issued in 1998 by the National Council on Science and Biotechnology, comprise the main instrument for regulating Biotechnology in Kenya. These regulations are based on the precautionary principle, prior informed consent or advance informed agreement, public participation and consultation, access to information (without prejudice to the protection of confidential information), access to justice (through compliance, liability, and compensation systems), and

[96] Commission on Intellectual Property Rights, *Integrating Intellectual Property Rights and Development Policy* (London: CIPR, 2002)

enforcement procedures and sanctions. They require that the release of biotechnology crops be preceded by the approval of the National Biosafety Committee (NBC).

Kenya is in the implementation phase of the UNEP-GEF Project and is expected to develop a national biosafety framework which comprises a combination of policy, legal, administrative and technical instruments set in place to address safety for the environment and human health in the context of modern biotechnology. The broad elements of the framework include: -

- Policy on biosafety;
- Legal/regulatory system;
- Administrative system to handle requests for permits which includes risk assessment procedures to help in decision-making;
- Mechanism for monitoring and inspection;
- System to provide information to stakeholders about National Biosafety Frameworks and for Public participation.

Public participation is a requirement in decision-making on imports of biotechnology and substantive law on environment provides for this right. This however remains a challenge to implement. Another challenge is the access to information where the information is technical and is presented in English while most Kenyans cannot read English. Another challenge is lack of access to documents due to distance from the capital where the NBC is situated and the culture in government which is known to limit public access to information by designating it as confidential.

Liability upon infringing the patents on crops:

The three torts that are relevant to liability and redress for biotechnology are negligence, nuisance and the rule in Rylands Vs Fletcher.[97] Given that these laws predate biotechnology activities and may not cover all kinds of damage likely to arise from biotechnology activities, the issue of their efficacy has been raised and the need to work out a suitable liability and redress system for patented crops.

[97] N. Rukuba-Ngaiza et al., *Public Involvement in Environmental Decision-making in Asia and East Africa: Law and Practice* (The Legal Vice Presidency, The International Bank for Reconstruction and Development/The World Bank, Washington DC, 2003)

Comparative analysis

International and regional dimensions of Kenya's Patent Laws and policies

Kenya is a member of several international organizations and has ratified a number of instruments that have implications on patent laws including the WTO Agreements, the Convention on Biological Diversity (CBD) and the Biosafety Protocol. Membership to the World Trade Organization implies that Kenya has to put in place mechanisms in its national law to domesticate provisions of agreements such as the Agreement on Trade Related aspects of Intellectual Property Rights (TRIPS).

The internationalisation of intellectual property rights within the scope of the World Trade Organization's Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS) raises the need to align the provisions of the Biodiversity Convention with the requirements of TRIPS. There is also need to consider the implications of the Food and Agriculture Organization's International Treaty on Plant Genetic Resources for Food and Agriculture, which provides for Farmers' Rights, a genus of intellectual property rights. Given that Kenya is a member of the International Convention for the Protection of New Varieties of Plants (UPOV Convention), this should inform policy directions in biotechnology research and development.

The CBD provides the framework for the development of biotechnology in a manner consistent with conservation and sustainable use of biological resources. It recognises the need to ensure equitable allocation of ownership rights and intellectual property rights to biotechnology by explicitly spelling out the rights of states to their natural resources and the rights to intellectual property authors for products of biotechnology. Article 16 of the Convention provides that such rights should support the objectives of the Convention and not run counter thereto.

The theory of democratic property rights argues that efficiently defined property rights are more likely to emerge if at least three conditions are met:

1. All relevant interests have to be represented in the negotiating process (the condition of representation).
2. All those involved in the negotiation must have full information about the consequences of various possible outcomes (the condition of full information).
3. One party must not coerce the others (the condition of non-domination).

The TRIPS negotiations did not meet these conditions of democratic bargaining.

I shall analyze the regulations of access to biological resources under the CBD and the PGRFA treaty, explaining the origin of the concept of Farmer's Rights and its content. It is important to note that there is no international plant variety protection system that advocates for plant breeding rights towards food security. Nothing in the UPOV Convention prioritizes legal protection of food crops over industrial crops[98]. This is crucial because most Kenyans owe their livelihood to Agriculture as a source of food, employment, heath in terms of medicine and income.

The UPOV Convention

A. Overview

The International Convention for the protection of New Varieties of Plants (UPOV) is the only international treaty focusing on plant variety protection.[99] Its main objective is promote the development of new varieties of plants, for the benefit of society through the grant of protection, which serves as an incentive to those who engage in commercial plant breeding[100]

Subject to the TRIPs Agreement, member States of the World Trade Organization (WTO) are obliged to provide for the protection of plant varieties. To sync the TRIPS patent with UPOV Convention on the protection of plant varieties, Article 27.3(b) permits Members to provide "for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof".[101] This means that international obligations could be adapted to Kenya's national circumstances. The UPOV Convention presents one model of a *sui generis* system of plant protection for plant breeders developing new plant varieties.[102]

B. Conditions and Scope

The conditions for granting a breeder's right are set out in Article 6 of UPOV 1978 and Article 5 of UPOV Convention 1991. These are novelty[103], distinctness[104], uniformity[105] and stability. With regard to the propagating material of a protected variety, any production or reproduction, conditioning for the purpose of propagation, offering for sale, selling or other

[98] GRAIN, *Plant variety protection to feed Africa? Rhetoric versus reality*, October 1999. available at: http://www.grain.org/Publications/variety-en-p.htm.
[99] P. CULLET, supra note *4*, at 99.
[100] S.K.VERMA, TRIPS *and Plant Variety Protection in Developing Countries,* 6 *EIPR*, 1995 at 282.
[101] M.BLAKENEY, supra note 1, p.83.
[102] VERMA, supra note 10, at 283
[103] 1991 Act, Article 6(1).
[104] 1991 Act, Article 7.
[105] 1991 Act, Article 8.

marketing, exporting, importing, stocking for any of these purposes mentioned shall require the authorization of the breeder. However, the right of the breeder in respect of the production of propagating material is not limited to "production for the purpose of commercial marketing", rather it is extended to all production. A farmer is therefore no longer able to freely save and re-sow propagating materials from the previous year's harvest. Re-use of seeds is however a common agricultural practice in Kenya.

Article 15(2) outlines an exception which permits Contracting States to restrict the breeder's rights, within reasonable limits and subject to the safeguarding of the legitimate interests of the breeder, in order to permit farmers to use for propagating purposes, on their holdings, the propagating material from the previous year's harvest.[106]

The duration of protection of breeders' right under the 1991 Act for plant varieties is not less than twenty years from the date of the grant of the breeders' right, and for trees and vines the duration should not be less than twenty-five years.[107]

On the other hand, Article 15(2) allows contracting parties, if they so wish, to provide an exception in favor of farmers subject to the legitimate interest of the breeder[108] Kenya could take advantage of this provision by protecting the small scale farmers' interests.

Article 14 of the 1991 Act adopts the concept of "essentially derived variety", restricting the application of the "breeder's privilege".[109] This could be interpreted to mean that for a breeder to improve an initial protected variety, they have to get authorization from the owner of the initial variety. This broadens the scope of protection of the plant and makes it difficult for the local farmers who would want to breed the current plant variety. This is in contrast to the interest of most developing countries and Kenya in particular.

These provisions seem to deprive farmers' rights. This is in conformity with the view of Carlos M. Correa that the underlying rationale of Farmer Rights relates to their possible role as an instrument to support the conservation of plant genetic resources for food and Agriculture.[110]

---

[106] Article 15(2).
[107] Article 19

[108] VERMA, Supra note 10, at 285
[109] Article 14 (5)
[110] C. M.CORREA, *Options for the Implementation of Farmers Rights at National Level*, December 2000, p.11

II. The TRIPs Agreement

A. Options of Plant Varieties Protection

Article 7, outlines the TRIPs Agreement objectives, "the protection and enforcement of intellectual property rights should contribute to the promotion of technological innovation and to the transfer and dissemination of technology, to the mutual advantage of producers and users of technological knowledge and in a manner conducive to social and economic welfare, and to a balance of rights and obligations."

Article 27(3) (b) of the TRIPs Agreement allows WTO members to exclude from patentability "plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological and micro-biological processes."[111]

This provision makes it mandatory that WTO members "provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof."

B. Patent v. Sui generis system

The TRIPs Agreement contains no further standard as to what constitutes an effective *sui generis* system, nor does it mention UPOV. Therefore, WTO Members that haven't acceded UPOV are not obliged to comply with UPOV provisions, and may prefer to develop their own *sui generis* system of protection.

In Kenya, the issue has been how to balance the rights of "breeders" and "farmers" while at the same time providing protection to new varieties of plants.[112] The protection of plants varieties under patent would be the worst solution for developing countries, as patent is the most powerful mean of protection.

Kenya already has a plant variety protection regime in place. The introduction of plant variety protection has not substantially fostered the development of new food crops. On the contrary, out of 136 applications filed and tested since 1997, only one was a food crop while

---

[111] It is worth mentioning that this provision follows the European Patent Convention level of protection, not the more protectionist level of the US law, where article 53(b) EPC provides that patents shall not be granted in respect of "plants or animals varieties or essentially biological processes for the production of plants or animals; this provision does not apply to microbiological processes or the products thereof."
See: J.H. REICHMAN, *Universal Minimum Standards of Intellectual Property Protection under the* TRIPS *Component of the WTO Agreement, 29 The International Lawyer*, 1995, p.358

[112] T. KONGOLO, supra note 5, at 362

most were cash crops such as ornamentals or sugarcane and more than half concerned rose varieties" [113]

III. Do Categories of IP Covered by TRIPs Include Plant Varieties?

Referring to TRIPs Agreement Art 1.2 reads as follows: "For the purposes of this Agreement, the term "intellectual property" refers to all categories of intellectual property that are the subject of Sections 1 through 7 of Part II."

Plant variety protection was only mentioned in "Section 5: Patents", Art 27.3, it reads:

"Members may also exclude from patentability, plants and animals other than micro-organisms. However, Members shall provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by any combination thereof."

This provision does not establish a standard for plant variety protection, it however provides that it should be protected either by patents or by an effective *sui generis system or by any combination thereof.* [114] The question arises as to whether plant varieties as provided in article 27.3(b) qualify as intellectual property subject to Art 1.2 of the TRIPs Agreement.

Gervais observes that the definition of intellectual property, for the purpose of TRIPS , comprises only the seven categories of Intellectual Property Rights mentioned in Part II of the Agreement namely; Copyright and related rights, Trademarks, Geographical indications, Industrial Designs, Patents, Layout-Designs of Integrated Circuits, and Undisclosed information.[115]

Another interpretation of article 1.2 in relation to article 27.3(b) of the TRIPs Agreement is that the mere mentioning of plant varieties, as presented in article 27.3(b), is a sufficient enough reason to consider it a category of intellectual property for the purpose of the TRIPs Agreement.

---

[113] P.CULLET, supra note 4, at 107

[114] Art. 27-34

[115] He states that: " Article 1(2) defines intellectual property in a pragmatic way: it comprises the forms of intellectual property covered in the agreement (namely copyright and related rights, trademarks, geographical indications, industrial designs, patents, layout-designs,(topographies) of integrated circuits and the protection of undisclosed information). This excludes from general TRIPS obligations forms of intellectual property(or of protection that some would consider as being a part of intellectual property) not covered by TRIPS. Certain *sui generis* or new forms of protection may be concerned." D. GERVAIS, *The* TRIPs Agreement*: Drafting History and Analysis*, Sweet & Maxwell, 1998, London, p.43.

Biological Resources and Farmers' Rights

Biopiracy refers to the allotment of knowledge and genetic resources of farming and indigenous communities by individuals or institutions seeking exclusive monopoly control (usually patents or plant breeders' rights) over these resources and knowledge. [116]

Traditional and indigenous farmers play a role in utilizing and conserving plant genetic resources. This is done through continuous selection of the best farmers' varieties which comes from hybridization between the crops on the farms and their wild relatives over a long span of time and as a result of human and natural selection of crops over several generations in diverse environments.[117]

Many traditional plants have been patented in developed countries ignoring farmers' contributions to the genetic resources through the selection of seeds over generations and denying their role in conservation and development of plant genetic resources.

II. Regulation of Access to Biological Resources at the International Level

A. Convention on Biological Diversity (CBD)

Objectives and Scope

The Convention on Biological Diversity (CBD) was adopted at the Rio de Janeiro Earth Summit, in June 1992. Kenya has ratified the convention. The main objectives of the Convention as indicated in Article 1 are:

- The conservation of biological diversity;
- Sustainable use of its components; and
- Fair and equitable benefit sharing of the benefits arising from the utilization of the genetic resources.

[116] ETC Group (group on erosion, technology and concentration), *Biopiracy +10 Communiqué*. March / April 2002 . available at: www.etcgroup.org/documents/biopiracy+10Comm.pdf.action

[117] S. BRUSH, *Providing Farmers' Rights Through In Situ Conservation of Crop Genetic Resources*, Rome, Commission on Plant Genetic for Food and Agriculture, , Background Study Paper, No. 3E First Extraordinary Session, 7-11 November 1994, page 4

Sovereign Rights of States

The CBD Preamble validates that States have sovereign rights over their own biological resources and are responsible for conserving their biological diversity and for using their biological resources in a sustainable manner. Article 3 as read with Article 15.1 affirms the sovereign rights of States to exploit their own resources pursuant to their own environmental policies. Article 15 recognizes states' sovereign rights to regulate access to their genetic resources, it imposes on them an obligation to facilitate access to genetic resources for environmentally sound uses by other Contracting States.[118]

Access to Genetic Resources

The CBD provides that access to genetic resources shall be carried out on "mutually agreed terms",[119] and subject to "prior informed consent of the Contracting Party providing such resources".[120]

Article 15.7 affirms the equitable sharing of benefits arising from the utilization of genetic resources. It provides that each contracting party shall take legislative, administrative or policy measures with the aim of sharing in a fair and equitable way the benefits arising from the commercial utilization of the genetic resources.

Article 19.2 requires that every contracting party should take every practicable measure to promote fair and equitable benefit sharing, especially on developing countries, with the benefits from the biotechnology crops distributed fairly based on mutually agreed terms and conditions.

The convention on biological diversity promotes nature by providing that when a plant, animal or microorganism is used for commercial gain, the company using it should pay the country from which it benefits from. Payment can be in the form of training the country's national researchers, transferring the biotechnology equipment and sharing the profit gotten from the use of these resources.[121]

---

[118] Article 15.2
[119] Article 15.4
[120] Article 15.5
[121] *Sustaining Life on Earth .How the Convention on Biological Diversity promotes nature and human well-being.* available at: http://www.biodiv.org

Traditional Knowledge

Article 8 (j) provides that each contracting party shall, "Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge, innovations and practices;" This section acknowledges the contribution of local and indigenous communities in conserving sustainable biological diversity. The right of citizens over their biodiversity is however subject to national legislation. Article 10 (a) (b) and (c) also mention indigenous and local communities.

CBD and TRIPs Legal Conflicts

This relationship between CBD and TRIPs has been a discussion under the international policy circle.[122] The confusion arises between the principle in TRIPs that provides that intellectual property are private property and the principle of national sovereignty over genetic resources as advocated in the CBD.[123]

International Treaty on Plant Genetic Resources on Food and Agriculture (PGRFA)

The PGRFA provides for farmers' right. Part III of the PGRFA includes a single article; Article 9 which deals with Farmers' Rights.

The PGRFA provides that contracting parties should agree to put in place an efficient, effective and transparent multilateral system to facilitate access to plant resources and to share in a fair and equitable manner, the benefits arising from these resources.[124] This helps to protect the rights of local communities to preserve the imperativeness of crops across different generations and contribute to sustainable genetic resource diversity.

Farmers' Rights

Article 9 of the PGRFA Treaty provides for Farmers' rights:

---

[122] *The Relationship Between the Agreement on* TRIPs *and Biodiversity Related Issues*, Final Report for DG Trade European Commission Submitted by CEAS Consultants (Wye)Ltd Centre for European Agricultural Studies in association with Geoff Tansey and Queen Mary Intellectual Property Research Institute, September 2002, p.53. available at: http://europa.eu.int/comm/trade/miti/intell/ceas.htm

[123] *The Relationship Between the Agreement on* TRIPs *and Biodiversity Related Issues*, supra note 102,p.54

[124] Article 10.2

9.1 The Contracting Parties recognize the enormous contribution that the local and indigenous communities and farmers of all regions of the world, particularly those in the centers of origin and crop diversity, have made and will continue to make for the conservation and development of plant genetic resources which constitute the basis of food and agriculture production throughout the world.

9.2 The Contracting Parties agree that the responsibility for realizing Farmers' Rights, as they relate to plant genetic resources for food and agriculture, rests with national governments. In accordance with their needs and priorities, each Contracting Party should, as appropriate, and subject to its national legislation, take measures to protect and promote Farmers Rights, including:

(a) Protection of traditional knowledge relevant to plant genetic resources for food and agriculture;

(b) The right to equitably participate in sharing benefits arising from the utilization of plant genetic resources for food and agriculture; and

(c) The right to participate in making decisions, at the national level, on matters related to the conservation and sustainable use of plant genetic resources for food and agriculture.

9.3 Nothing in this Article shall be interpreted to limit any rights that farmers have to save, use, exchange and sell farm-saved seed/propagating material, subject to national law and as appropriate."

Origin of the Concept of Farmers' Rights and its Various Elements

The concept of Famers' Rights originates from debates within FAO tackling the issues arising from the distribution of benefits between farmers as the donors of germplasm and the companies that produce different varieties from the germplasm.[125]

Farmers in Kenya mainly use traditional knowledge as well as simple traditional techniques to conserve, manage and develop their crops[126] There is however no system of compensating these farmers.[127]

[125] C. CORREA,supra note 40 ,p3
[126] P. MARIN, supra note 8, p.60
[127] C CORREA,supra note 40,p3

International Undertaking

The International Undertaking (IU) is a non-binding instrument subscribed by most FAO members, apart from USA. Under this agreement, the state parties agree to provide other parties with free access to plant genetic resources under their territory on the basis of the simple common heritage of mankind.[128] The term "free access" does not necessarily mean free of charge, it means having fair and equitable benefit sharing.

FAO Resolution 5/89 defines Farmers' Rights as, "rights arising from the past, present and future contribution of farmers in conserving, improving and making available plant genetic resources, particularly those in centers of origin/diversity. These rights are vested in the International Community, as trustee for present and future generations of farmers, for the purpose of ensuring full benefits to farmers, and supporting the continuation of their contributions, as well as the attainment of the overall purposes of the International Undertaking." Resolution 3/91 under the FAO recognizes the sovereign rights of nations over their own genetic resources. An International Fund for Plant Genetic Resources has been set up to support plant genetic conservation, especially in developing countries. The loophole in this provision is that it does not specify the ways to reward traditional farmers nor does it clarify the nature of their rights.

The PGRFA treaty does not grant exclusive rights to farmers, but rather finds a way to establish appropriate benefit sharing systems that are in sync with communal ownership of property as opposed to private ownership[129] Article 13.3 provides that parties should agree on the benefits arising from the use of plant genetic resources and they should be represented in the decision making process.[130] The PGRFA treaty does not consider the property rights of farmers. The context of rights is in form of residual rights which is the right to save, use, exchange and sell farm-saved seeds.[131]

Article 15.2 of UPOV 1991 states that the rights of farmers is only available if it is provided under law and it should be subject to the breeder's legitimate interests, within reasonable

---

[128] C CORREA,supra note 40, p.3

[129] D. GERVAIS, *The Internationalization of Intellectual Property: New Challenges from the Very Old and the Very New, 12 Fordham Intell. Prop. Media& Ent.L.J*., 2002, p.972

[130] Under Article 13.3 Contracting Parties agree that benefits arising from the use of plant genetic resources for food and agriculture that are shared under the Multilateral System should flow primarily, directly and indirectly, to farmers in all countries, especially in developing countries, and countries with economies in transition, who conserve and sustainably utilize plant genetic resources for food and agriculture

[131] P.CULLET,supra note 119, p.2

limits. Cottier is of the opinion that the concept of IPRs may contain traditional knowledge relating to plant genetic resources. This kind of knowledge is part of traditional heritage of specific communities. [132]

According to Grisberger, unlike breeders' rights which are IPRs, farmers' rights are just exceptions to IPRs and they should include simply the right to compensate.[133] This is because there is no agreement on the exact right to be accorded to farmers.

Farmers' Rights appear to be ambiguous because they appear as a retrospective reward and not a reward for current innovation. They also have unlimited duration for the protection of plant genetic resources.[134] The right does not limit the contribution made by a farmer to a specific subject matter, but is general and covers plant breeding over the years. It is therefore difficult to identify the specific inventor and the exact contribution to a particular plant breed.[135] Usually, each intellectual property subject matter is well defined but the subject matter when it comes to granting Framers' Rights fall under, "plant, plant varieties, crops, landraces, traditional plant genetic resources for food and agriculture with their wild and weedy relatives from in situ and ex situ, and the related know-how of informal plant breeders."[136]Farmers' Rights are therefore not in themselves an intellectual property right but they were created to protect farmers' use and development of genetic resources.[137]

The basic differences that exist between Farmers' Rights and Intellectual Property Rights in terms of the rights granted, defined subject matter, title holder and duration raise ambiguities as to whether Framers' Rights can easily be accommodated under intellectual property rights.

---

[132] TH. COTTIER , *The protection of Genetic Resources and Traditional Knowledge : Towards More specific Rights and obligations in world trade law* , in: Abbott ,TH. Cottier . And F.Gurry , *The Intellectual Property System; Commentary and Materials,* part II Kluwer law international 1999 p.1841

[133] J. STAFFLER, *Recognition of Farmers' Rights an "effective sui generis System" for Plant Varieties(Article 27.3(b) of* TRIPS.

[134] M.BLAKENEY, supra note 117, at 4.2

[135] M.BLAKENEY. Supra note 117, at 4.2

[136] J.STAFFLER, supra note 113

[137] C. CORREA, supra note 40, p. 15

CHAPTER 5

SUMMARY OF RECOMMENDATIONS

In order to ensure that intellectual property rights contribute to food security in Kenya as well as protect the rights of farmers, the following recommendations could be implemented.[138]

1. Kenya should use the Council for TRIPS to create a practice of asking states to explain bilateral departures from multilaterally agreed IP standards.

2. Kenya should use the WTO Trade Review Policy Mechanism to review distortions in trade being caused by excessively high intellectual property standards.

3. Kenya should review their participation in the WIPO standard setting process with a view to increasing their participation in the expert groups and broadening the range of experts they send to WIPO meetings to include, for example, experts in health, environment, economy, culture and agriculture.

4. Developed countries could assist by funding aid projects aimed at establishing structures for cooperation amongst ministries/regulators which have expertise to contribute to development aspects of intellectual property issues within Kenya

5. Developed countries should review the operation of the policy advisory committees that advise their patent offices with a view to significantly increasing the participation of members of civil society in those committees.

8. Developed countries should assess their conduct of trade negotiations with Kenya with a view to ensuring that development objectives remain a priority during those negotiations.

Conclusion

A balance can be achieved while protecting breeders' rights in Kenya by considering farmers' rights. The concept of farmers' rights emerged in order to offer counterbalance to

[138] www.iprcommission.org/papers/pdfs/study_papers/sp8_drahos_study.pd

the intellectual property system, and to ensure that barriers were not created against the farmers' use and development of plant genetic resources. Hence farmers' rights may not be in themselves, strictly speaking, an intellectual property rights mechanism. However, considering that the concept of farmers' rights have been recognized through the PGFRA treaty and it covers unique subject matter which involves the food needs of people in Kenya, it is thus imperative that a system is created, which is specifically tailored to reward farmers for their immense contribution towards food security for all. Several developing countries such as India has adopted a *sui generis* system to protect plant varieties and recognize at the same time farmers' rights and protect relevant traditional knowledge.

BIBLIOGRAGHY

A. Books

F.M. Abbott ,TH. Cottier . And F.Gurry , *The Intellectual Property System; Commentary and Materials*, part II Kluwer law international 1999, The Hague/London/Boston.

M.BLAKENEY, *Trade Related Aspects of Intellectual property Rights: A Concise Guide to the* TRIPs Agreement, Sweet & Maxwell, 1996, London

F.H. ERBISCHE, and K.M.MAREDIA, (Eds.), Intellectual Property Rights in Agricultural Biotechnology, Biotechnology in Agricultural Series, No.20, Cab International,1998, Wallingford-New York

D. GERVAIS, *The* TRIPs Agreement*: Drafting History and Analysis*, Sweet & Maxwell, 1998, London.

S. HALPERN, C. NARD and K.PORT, *Fundamentals of United States Intellectual Property Law: Copyright, Patent, Trademark*, Kluwer Law International, 1999

P. C. .MARIN, *Providing Protection for Plant Genetic Resources . Patents Sui generis System and Bio-partnerships*, Kluwer Law international, New York 2002.

A. MILLER & M DAVIS, *Intellectual Property-Patents, Trademarks, and Copyright. In a nutshell*, West Group, 2000, ST. Paul Minn.

W. REID , *Biopolicy International : Genetic Resources and Sustainable Agriculture, Creating incentives for local innovation and adaptation*, African centre for technology studies, 1992 Naïrobi

J. STAFFLER, *Towards a Reconciliation between the Convention on Biological Diversity and* TRIPs Agreement, *An Interface among Intellectual Property Rights on Biotechnology, Traditional Knowledge and Benefit Sharing*, Universite de Geneve, Institut Universitaire de Hautes Etudes Internationales.

WIPO Intellectual Property Handbook: Policy, Law and Use, 2001, Geneva.

B. Articles and contribution to collective works

J. BARTON, *Acquiring Protection for Improved Germplasm and Inbred Lines*, in:F.H. Erbisch, and K.M.Maredia, (Eds.), Intellectual Property Rights in Agricultural Biotechnology, Biotechnology in Agricultural Series, No.20, Cab International, 1998, Wallingford-New York, 19

M.BLAKENEY, *Regulating Access to Genetic Resources*, International Association for the Advancement of Teaching and Research in Intellectual Property Congress (ATRIP), New Delhi, India, 6-8 October 2002

M. BLAKENEY, *Protection of Plant Varieties and Farmers Right*. International Seminar on the Role of Intellectual Property in the Field of Biodiversity and Traditional Knowledge, Jointly Organized by the Brazilian National Institute of Industrial Property and the European Commission, Manaus/ Amazonas/ Brazile, 9-11 September 2001

S. BRUSH, *Providing Farmers' Rights Through In Situ Conservation of Crop Genetic Resources*, Rome, Commission on Plant Genetic for Food and Agriculture, Background Study Paper, No. 3E First Extraordinary Session, 7-11 November 1994

C.CORREA, Access to Plant Genetic Resources and Intellectual Property Rights. Rome, Commission on Plant Genetic for Food and Agriculture, Background Study Paper, No.8, 1999

C. M.CORREA, *Options for the Implementation of Farmers Rights at National Level*, December 2000

TH. COTTIER , *The protection of Genetic Resources and Traditional Knowledge : Towards More specific Rights and obligations in world trade law* , in: Abbott ,TH. Cottier . And F.Gurry , The intellectual property system; commentary and Materials, part II Kluwer law international 1999, The Hague/London/Boston.

P.CULLET, *The International Treaty on Plant Genetic Resources For Food and Agriculture*, *IELRC* Briefing Paper 2003-2

P. CULLET, *Plant Variety Protection in Africa: Towards Compliance With The* TRIPs Agreement, 45 *Journal of African Law*, 2001, 97

F.DESSEMONTET, *The* TRIPS *Dispute Settlement Procedure*, ATRIP Congress, Lausanne, Switzerland, 19-21 September,2001

D. DOWNES , *How Intellectual Property could be a tool to protect TK*", 25 Colum, J. Envtl .L., 2000, 253

J. GERO, K. LANNAN, *Trade and Innovation : Unilateralism v. Multilateralism, 21 Canada-U.S.L.J.*, 1995, 81

D. GERVAIS, *The Internationalization of Intellectual Property: New Challenges from the Very Old and the Very New, 12 Fordham Intell. Prop. Media& Ent.L.J.*, 2002, 929

M. GETLAN, TRIPs *and the Future of Section 301: A Comparative Study in Trade Dispute Resolution, 34 Col.J. Transnat'l L.*, 1995, 173

A. GUPTA, *How Can Asia Countries Protect Traditional Knowledge, Farmers rights and Access to Genetic Resources Through The Implementation or Review of the WTO* TRIPs Agreement, paper presented at the Joint ICTSD/CEE/HBF Regional Dialogue for Governments and civil society, organized by International Centre for Trade and Sustainable Development, Geneva at Chiang Mai. Thailand March 29-30, 2001.

T. KONGOLO, *New Options for African Countries regarding Protection for New Varieties of Plants,* 4 *JWIP*, 2001, 349

T. KONGOLO, *Biodiversity and African Countries*, *E.I.P.R.*, 2002, 579

M. LAKASHMIKUMARAN, *Plant Variety Protection: Salient features*, International Association for the Advancement of Teaching and Research in Intellectual Property Congress (ATRIP), New Delhi, India, 6-8 October 2002.

MGBEOJI, Patents and Traditional Knowledge of the Uses of Plants: Is a Communal Patent Part of the Solution to the Scourge of Bio Piracy?, 9 Ind.J. Global Leg. Stud.., 2001, 163

Z. NAIGEN , U.S.- China WTO Roundtable: *Dispute Settlement under the* TRIPs Agreement *From the Perspective of Treaty Interpretation*, 17 Temp. Int'l & Comp. L.J. , spring 2003, 199

K. PURI, *Protection of Traditional Knowledge & Cultural Expressions of Indigenous Peoples .Why Model Law?*, Lecture presented in LL.M programme in intellectual Property, Turin University/ WIPO June 11,2003

S.RAGAVAN, *Protection of Traditional Knowledge*, 2 Minn. Intell. Prop. Rev.,2001, 1

J.H. REICHMAN, *Universal Minimum Standards of Intellectual Property Protection under the* TRIPS *Component of the WTO Agreement, 29 The International Lawyer*, 1995, 345

RICOLFI, *Biotechnology, Patents and Epistemic Approaches, Rev. Biolaw and Business*, 2, 2002

S. K.SELL, *Proceeding of the 2002 Conference Access to Medicine in Developing World*, 20 Wis-int'l L.J. summer 2002, 481