

**“Plant Breeders’ Rights in Kenya:
Examining the effect of the DUS Test in Food Crops and Ornamentals”**

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Declaration

I, **Caroline Wanjiru Muchiri**, hereby declare that this is my original work and has not been presented for a degree in any other University

Signed..... Date.....

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This work is submitted for examination with the approval of Prof. Patricia Kameri-Mbote as Supervisor

Signed..... Date.....

Prof. Patricia Kameri-Mbote

To my family, you are a blessing

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ABSTRACT

Plant breeding is a significant contributor to the success of any agricultural sector as it is the source of new, improved and better varieties for cultivation. In Kenya, agriculture is vital as it is a foreign exchange earner in addition to being a major source of food and employment especially in the rural areas. As a step towards promoting agriculture through the law and as part of her international obligations in particular under the TRIPS agreement, Kenya ratified the UPOV Convention, 1991 Act and domesticated its provisions through the Seeds and Plant Varieties Act. One of the benefits of the UPOV Convention is that it is a ready legislation and most member States including Kenya adopted its provisions as they are with minimal or no amendments.

Amongst the provisions adopted in by the Seeds and Plant Varieties Act are the provisions relating to the DUS test for registration of Plant Breeders' Rights. The DUS test is uniformly applied across all Member States when issuing grants of plant breeders' rights. As the international governing body for PBRs, UPOV has developed examination guidelines for PBRs applications and applying the DUS test before issuance of a grant by any Member State. The uniform application of the DUS test enable Member States to adopt examination reports issued by the UPOV liaison offices which are the offices administering PBRs in UPOV Member States. KEPHIS in such cases does not have to undertake the examination process and wholly relies on such examination report. The uniformity of the application of the test is done against all applications for all new plant varieties filed at KEPHIS.

This research examines the effect of the uniform application of the DUS test for all new plant varieties paying specific attention to the food crop and ornamental varieties. These two have been chosen primarily because of the noticeable differences in the number of reported applications for registration of PBRs by KEPHIS on an annual basis. This work is a desktop research and is based on written texts in the form of books, articles and reports on the subject matter. Amongst the findings by in this research is first that primarily different varieties have different and unique characteristics and that food crop varieties in Kenya are mainly developed by the farmers who follow breed for various purposes including sustenance of the crops on their farms. Food crop varieties especially the ones developed by subsistence farmers have new and distinct characteristics but they are ordinarily heterogeneous and less stable. These are the characteristics that make them adaptable to the various environmental

conditions that they are cultivated. However, despite being new and distinct, these varieties would not qualify for protection under the Seeds and Plant Varieties Act as the standards set under the said Act require a variety not only be new and distinct but also uniform and stable.

The available texts on the subject matter of this work enumerate the benefits of having PVP in the form of PBRs in the country. The benefits of applying the international standards for ornamentals varieties because of the value add for purposes of export. However none of the available texts explore the effect, presently or would be, for applying these standards to food crops. The most immediate effect for the uniform application of these standards has been the dismal number of applications for PBRs for food crops. The other effects include the lack of recognition and protection under the law of such varieties and plant breeders.

This work has concluded by recommending the adoption of an alternative or differentiated test for food crop varieties in Kenya which is reflective of the basic nature of the breeding in this subsector. The alternative test is to be applied against food crop varieties whilst maintaining the international standard for plant varieties specifically bred for the export market and in particular the ornamentals. The varied test ensures that the law recognizes all plant breeding at all levels and by all plant breeders. It is also recognized that protection is not required or is not necessary for all plant varieties and that intellectual property should not be the only form of protection available for the breeders in all sectors. In light of this, it is recommended that as a country, Kenya adopts other forms of recognition and protection of rights of farmers in new plant varieties they develop such as the ones recommended by African Model Law for the Protection of the Rights of Local Communities, Farmers and Breeders and the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) which mandates Member States to offer some form of recognition to farmers and the varieties they have developed and reserved over the years.

Lastly, it is also recommended that a broad and less restrictive definition of a plant breeder under the Seeds and Plant Varieties Rights Act be adopted. Since this law is silent on what exactly is considered as plant breeding, it is suggested that a specific definition of what activities are to be considered as breeding under the Act be adopted so as to guide in the interpretation of this law.

LIST OF ABBREVIATIONS

ASSINSEL- International Association of Plant Breeders for the Protection of Plant Varieties

DNA- Deoxyribonucleic Acid

DUS- Distinctiveness Uniformity and Stability

IPRs-Intellectual Property Rights

IP-Intellectual Property

ITPGRFA- International Treaty on Plant Genetic Resources for Food and Agriculture

KEPHIS- The Kenya Plant Health Inspectorate Services

KARI- Kenya Agricultural Research Institute

KALRO- Kenya Agricultural and Livestock Research Organization

NPVA-New Plant Varieties Act 2004, Malaysia

PBRs-Plant Breeders' Rights

PGRs-Plant Genetic Resources

PPVFRA- Protection of Plant Varieties and Farmers Rights' Authority, India

PPVFR Act- Protection of Plant Varieties and Farmers Rights' Act, India

PVP-Plant Variety Protection

TRIPs-Trade Related Aspects of Intellectual Property Agreement

UPOV- *Union internationale pour la Protection des Obtentions Végétales*

USD-United States Dollars

WIPO-World Intellectual Property Office

WTO-World Trade Organisation

CHAPTER ONE

1.1 Background

Kenya is an agricultural country with both commercial and subsistence farming taking place in various parts of the country. In recognizing the role of law in development, Kenya has enacted various laws which seek to protect and recognize the rights of the various players in the agricultural sector such as growers and breeders. These laws include the Seeds and Plant Varieties Act (Cap 326) as amended by the Seeds and Plant Varieties (Amendment) Act, 2012 which mainly recognizes and protects the rights of breeders through granting them intellectual property rights in the form of plant breeders' rights.¹ The Plant Variety Protection (PVP) through Plant Breeders' Rights (PBRs) is available to all new varieties in Kenya as long as they meet the set standards under the law.²

The Kenya Plant Health Inspectorate Services (KEPHIS) is a regulatory state corporation with the specific mandate to assure the quality of agricultural inputs and produce, newly bred plant varieties and the health of plant produce in the agricultural sector to promote sustainable agriculture and economic growth in Kenya.³ KEPHIS is the national designated authority for matters relating to seeds and plant variety protection under the Seeds and Plant Varieties Act which it also administers.⁴ Currently, KEPHIS administers the PBRs in Kenya and it receives, examines and grants applications for PBRs.⁵

¹ Section 17 of the Seeds and Plants Varieties Act, Chapter 326 Laws of Kenya

² Pursuant to Section 17 (1) of the Act, plant variety protection covers varieties of all plant genera and species. This includes ornamentals, vines, horticultural and food crop varieties.

³ KEPHIS is established under the State Corporations Act (Cap 446) and pursuant to Legal No. 305 of 18th October 1996.

⁴ Section 3A of the Act as amended in 2012

⁵ Power to do so is granted under by the Legal Notice, *ibid*. For more details on the operations of KEPHIS visit their website <http://www.kephis.org>, last accessed on 20th July, 2014 at 21.45 hours

KEPHIS reports annually on its activities including the number of PBRs applications received, granted, withdrawn or abandoned in each year.⁶ The number of applications and grants of PBRs is an indicator of the level of plant breeding being undertaken in any country. High number of applications for PBRs is representative of the amount and the level of investment in the breeding sector. PBRs are intended to provide the breeders with an opportunity to recoup their profits whilst providing the growers with better and improved plant varieties.⁷ Plant breeding is fundamental in agricultural research as it creates plant varieties with desirable qualities such as increased yield of crops, high resistance to pests, diseases and harsh climatic conditions amongst others.⁸ However the breeding process itself is lengthy and often costly whilst the process of duplication of the new varieties is easy.⁹ PVP is therefore considered to be an equitable way to give plant breeders an opportunity of a fair reward for their work, effort and investment in breeding.¹⁰ The grant affords them some protection against unauthorised duplication of their varieties.¹¹ Such protection is also considered as an incentive to the breeder to undertake more research and develop more varieties to the benefit of the stakeholders.¹²

Whilst an effective PVP system is presumed to be an adequate incentive and reward to breeders to conduct research and invest in more varieties, breeding in the ornamentals and food crops in Kenya has never been at par. Over the years, KEPHIS has reported a low number of PBR

⁶This is through the KEPHIS annual reports which are accessible publicly at http://www.kephis.org/index.php/downloads-documents/cat_view/11-annual-reports, last accessed on 20th July, 2014 at 21.45 hours

⁷ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

⁸ Louwaars, Niels., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

⁹ Cornish W. R, *Intellectual Property* (3rd edn) Sweet & Maxwell 1996

¹⁰ L. Bently & B. Sherman, *Intellectual Property Law* (3rd edn) Oxford University Press 2009

¹¹ Ibid

¹² Ibid

applications and grants for food crops compared to ornamentals.¹³ The low number of food crop applications is further dominated by applications for hybrid and hybrid parental varieties of maize clearly indicating that there are little or no applications being made for parental varieties of food crops.¹⁴ Notably also the ornamental applications are dominated by rose variety of flowers and the country is even able to produce enough for its own market and for export.¹⁵

PBRs are granted for a limited period but upon compliance with standards set under the Act which are heavily borrowed from those set by the International Union for the New Varieties of Plants (UPOV).¹⁶ Primarily, a variety must be distinct, uniform and stable and novel and the application must be accompanied by a fee for it to be accepted and examined for registrability.¹⁷ This test is applied uniformly and all varieties submitted to KEPHIS undergo the same process of examination and testing.¹⁸

Kenyan farmers largely farm for subsistence purposes and they have traditionally produced most of their own food.¹⁹ However with the challenges of globalisation and liberalisation²⁰, the food

¹³ KEPHIS Annual Reports and Financial Statements; 2010, 2011, 2012 and 2013, Available at http://www.kephis.org/index.php/downloads-documents/cat_view/11-annual-reports, last accessed on 20th July, 2014 at 21.45 hours

¹⁴ Ibid

¹⁵ Ibid. In 2012, roses were placed as number 2 in the commodities for export listing by the Kenya National Bureau of Statistics. See Kenya Facts and figures 2012, Kenya National Bureau of Statistics, 2012

¹⁶ This is an intergovernmental organization with headquarters in Geneva (Switzerland) which was established by the International Convention for the Protection of New Varieties of Plants adopted in 1961 and it was revised in 1972, 1978 and 1991. Kenya is a Member State of the UPOV Convention and although the Seeds and Plant Varieties Act is based on the 1978 Act, the subsequent amendments to the Act in particular the amendments effected through the Seeds and Plant Varieties (Amendment) Act, 2012 are a step towards ensuring compliance with the 1991 Act. For more details on the UPOV please visit <http://www.upov.int/about/en/overview.html> as accessed on 24th November, 2014 at 21.00 hours

¹⁷ Section 18(3) and Part II of the Fourth Schedule of the Seeds and Varieties Act

¹⁸ Section 17, the rights under the Act may be granted in respect of all plant genera and species

¹⁹ Nyikai, R. A. “*Commercial and subsistence Farming: What is the future for smallholder Kenyan Agriculture*” African Crop Science Conference Proceedings, Vol. 6. 591-596, African Crop Science Society (2003)

²⁰ Ibid

production has seen the entry of competition from commercial farmers, plant breeders, producers and growers whose main objective is profit optimization and not sustenance as is the case for subsistence farmers. Due to various factors such as limited resources, the subsistence farmers sometimes double up as both plant breeders and growers albeit in small capacities. Breeding by subsistence farmers' focus on the plants that they grow and are influenced by the climatic conditions of the areas they are in.²¹ The new varieties so bred are able to withstand harsh weather conditions, resist pests and diseases, they have desirable qualities such as taste and high nutrition²² and the plants also produce enough to sustain their families. These varieties are new or novel and possess some level of distinctiveness in their identifying characteristics. They are however more heterogeneous and less stable which characteristics however make them more adaptable to their specific environments that the farmers live.²³

Commercialization of such varieties would be difficult as they would not be capable of being protected through the PBR system. This phenomenon is attributable to various factors including the failure to meet the DUS standards of registrability set under the Act. The fee chargeable for the application is also high²⁴ especially when the economic background of the farmers is taken into account. These limitations largely affect the food crops sector whose effect is seen through the low number of applications for PBRs in the crops. It is therefore important to review the PVP regime in particular the Seeds and Plant Varieties Act to *first* acknowledge the uniqueness of the food crops plant breeding done by the subsistence farmers and *secondly* to provide for appropriate protection to them in the form of plant breeders' rights. One way to achieve this is through adjustment of the tests set under the law for registrability of plant breeders' rights. Such a PVP system will be a true 'sui generis' system and it will protect all breeders in Kenya.

²¹ Wekundah, Joseph M. 'Why Informal Seed Sector is Important in Food Security' The African Technology Policy Studies Network (ATPS), 2012

²² Ibid

²³ Commission on Intellectual Property Rights, "*Integrating Intellectual Property Rights and Development Policy*", London September 2002

²⁴ Currently the application fee is US\$ 200 and the fee is applicable to both foreigners and locals. KEPHIS however accepts payment in Kenyan currency but the applicant has to pay an equivalent of US\$200

This research focuses on the standards set under the Act for the registration of PBRs and the ripple effect they cause in the food crops compared to ornamentals.

1.2 Statement of the Problem

Since its inception in 1997, KEPHIS has continually reported a lower number of PBR applications and grants in food crops as compared to ornamental varieties. This presupposes that there is less breeding being undertaken for food crops compared with the ornamentals. This is not the case. The standards set by the current Seeds and Plant Varieties Act impose a test that is so high that the ‘subsistence breeders’ cannot meet. The test is uniformly applied against all applications for grant of PBRs made in all subsectors in Kenya. This law and in particular the standards applicable, are heavily borrowed from the International Union for the Protection of new Varieties of Plants (UPOV) which makes no distinction as to the nature of the breeding in various sectors in the various countries. In addition, Kenya has no regulations of its own developed for its unique breeders instead it adopts the ‘one shoe size fits all’ approach set by UPOV when it comes to examination of the applications for the PBRs. The effect of this approach is evidenced through the dismal number of applications for PBRs in food crops compared to the ornamentals. There is therefore need for a review of this law to create separate application standards applicable for the different breeding sectors and in particular for food crops that is different from that of other sectors including ornamentals.

1.3 Hypotheses

The following hypotheses were generated for purposes of this work:-

- i. That the PVP law in Kenya has generalized all breeders by applying a uniform test and application standards across all categories of breeding before recognizing the PBRs and that the generalization has led to the small number of applications for PBRs in food crops in Kenya;
- ii. That there is need to review the law to recognize the unique characteristics of the food crop breeding and set standards to be satisfied before registration of PBRs depending on the category of breeding.

1.4 Objectives of the study

The main objective of this study is to establish whether the standards set under the Seeds and Plant Variety Act in Kenya hinders the food crop plant breeders from seeking PVP offered under that Act.

1.4.1 Specific Objectives

- i. To discuss the nature of Plant Breeding and Plant Variety Protection (PVP) and the various categories of breeding in Kenya and their unique characteristics if any;
- ii. To discuss the application process, standards and the test of Distinct, Uniform and Stable (DUS) for PVP in Kenya with specific regard to food crops and ornamentals;
- iii. To ascertain the effect of the DUS test of PVP in food crops and ornamentals in Kenya; and
- iv. To compare analytically the Kenyan PVP system with at least two PBR systems that may be considered successful the tests they have applied especially with food crop and ornamentals varieties and establish any trend or attribute that Kenya can borrow or use as a guide.

1.5 Research Questions

This research work aims at answering the following major questions which are:-

- i. What is the nature and the characteristics of food crop plant breeding in Kenya and how different is it from ornamental plant breeding?
- ii. Has the PVP law in Kenya and the standards set under has sufficiently protected all plant breeders?
- iii. What are the standards and the costs set under the PVP law and do they prevent breeders in food crops from applying for PBRs?
- iv. Is there need to amend or review the law to accommodate breeders in food crops in Kenya?

1.6 Theoretical framework

This research proceeds mainly on property law, natural law and utilitarian theories though not in exclusivity but as complimenting one another.

Intellectual property is a term that has been used to refer to the general area of law that encompasses patents, trademarks, designs and a host of other related rights²⁵ such as plant breeder's rights. Intellectual property law creates property rights in wide and diverse range of intangible things.²⁶ Property represents a legal relationship between people, the community and also the government.²⁷ It is a bundle of rights and expectations in a tangible or intangible thing that are enforceable against third parties including the government.²⁸ Property rights are granted by the State and they allow the owner to exercise some level of State power against third parties including the State.²⁹ All intellectual property rights are negative in nature as they are primarily rights to stop others from doing certain thing (s) with regard to that what is protected. Such rights include the right to stop pirates, counterfeiters, imitators and even third parties from using that what is protected without the licence or permission from the right-owner.³⁰ The owner is only able to exercise these rights after the State recognizes the existence of the invention and protects it by allowing him to exercise State power against third parties.

John Locke one of the proponents of natural law argues that there is a state of nature (common property) which man can exploit for his own good.³¹ Where a man removes from the common property and mixes it with his labour, the resultant becomes his property.³² This property should

²⁵ Bently, L & B. Sherman, *Intellectual Property Law* (3rd edn) Oxford University Press 2009

²⁶ Bently, L & B. Sherman, *Ibid*

²⁷ Mbote P.K *et. al* "Ours by Right: Law, Politics and Realities of Community Property in Kenya" Strathmore University Press (2013)

²⁸ Mbote, *ibid*

²⁹ Merges, Robert P. *Justifying Intellectual Property*, Harvard University Press, Cambridge, Massachusetts London, England (2011)

³⁰ Cornish. W, Llewelyn.D and Aplin.T, "Intellectual Property: Patents, Copyright, Trade Marks and Allied Rights", (8th edn) Sweet & Maxwell (2013)

³¹ John Locke "Two Treatises of Government" in MDA Freeman *Lloyds Introduction to Jurisprudence*, (7th edn, London" Sweet & Maxwell Ltd, 2001)

³² John Locke, *Ibid*

therefore not be taken away from the person without his authority or consent.³³ As per this theory, labour forms the basis of property ownership and thus informs the protection of property. He further Locke argues that the mixing of labour with that what is provided by nature to create property excludes other men from claiming common right to the resultant. This theory finds part credence in intellectual property law which grants exclusive or monopolistic individual right's creations of the mind. According to this theory, every man is imbued with reason and all men are in a state of nature.³⁴ This means that all men have the same capacity and can access the same resources to enable them create property. That all men need to do is to add labour to that what is available and they would have property of their own. The subject of protection of intellectual property is the manifestation of the creation of the mind and not the idea and once granted, the rights are monopolistic in nature and prohibit any use thereof without the consent of the right holder.³⁵

The utilitarian theory as offered by Jeremy Bentham, posits that property law is an embodiment of expectations of property holders that their rights will be protected in that what belongs to them.³⁶ This theory suggests that where the law meets the expectations of property holders, it makes it desirable to others to acquire similar property or more property in the case of those who already have property. A regime of protection of intellectual property in any country is seen as an incentive to both investors and the innovators to innovate more as they are guaranteed of some sort of protection. This argument is advanced by the reward and incentive theory which is the major conventional IP theory whose main argument is that to promote creativity and common pool of public valuable knowledge and information, there must be a system IP which rewards the creators for their creations.³⁷ The reward here is the form of protection of the creations through

³³John Locke, Ibid

³⁴ MDA Freeman *Lloyds Introduction to Jurisprudence*, (7th edn, London" Sweet & Maxwell Ltd, 2001)

³⁵ In most cases, the prohibition is against any commercial use without the authority of the right holder. However, even where the use is not commercial in nature, for instance use of copyrighted material for educational research the user must acknowledge the source of the information, generally referred to as moral rights in copyright.

³⁶ Jeremy Bentham, *Theory of Legislation-Translated by Hildereth*, (Trubner and Co. London, 1896)

³⁷ Chidi Oguamanam, '*Beyond Theories: Intellectual Property Dynamics in the Global Knowledge Economy*' Wake Forest Intellectual Property Law Journal, No. 2 2008-2009

the law.³⁸ In recognizing this, the TRIPS Agreement mandates all Member States of the World Trade Organisation (WTO) to establish regimes for protection of intellectual property rights as part of their responsibility under the convention.³⁹

These theories collectively suggest that all innovator need is the assurance of protection of their property and the same will serve as an incentive to innovate. That there exists common property and every person is capable of applying labour to such common property create property capable of being protected under the law. Whilst this is a correct assumption, the various intellectual property laws imposes various standards to be satisfied by every person before the individual right can be granted. In some instances, these standards have proven too stringent to achieve effectively denying individuals of protection of the law despite having ‘creations of the mind’.

These theories will be tested against the law of protection of plant breeders in Kenya, the Seeds and Plant Varieties Act. In particular this study will seek to disprove the naturalist and utilitarianism theories on the basis that despite there being a law governing PBR’s in Kenya this law does not seem to protect ‘creations of the mind’ from the food crops subsector. This has resulted to there being low number of PBR application filed in the food subsector as compared with those of the ornamental subsector in Kenya. The researcher seeks to examine the standards to be attained by every application for a grant of PBR in Kenya and their effect on the number of grants sought by innovators.

1.7 Literature review

Intellectual property is a topic that has attracted many scholars both local and international whose contributions will be appreciated in this research. However, there is scarcity of literature on the problem that this research seeks to tackle. In particular, this research seeks to examine the effect of the conditions set under the Kenya’s Seeds and Plant Varieties Act to be satisfied before a grant of PBR can be issued. The available literature on the matter of Plant breeders Rights in Kenya is about the system as a whole and its benefits. The reports from KEPHIS provide the status of the grants of PBRs but none of them examine the extent or the effect that the set

³⁸Chidi Oguamanam, *ibid*

³⁹ Article 4 of the Trade-Related Aspects of Intellectual Property Rights Agreement

standards have had on the grants of PBRs reported on. This research relying on such reports shall examine these standards, how they came to be and the how they have affected the number of PBRs in Kenya.

Intellectual property (IP) refers to rights in form of patents, trademarks and copyrights.⁴⁰ It is a branch of law that protects the finer manifestations of human achievement.⁴¹ It protects the application of ideas and information that are of commercial value.⁴² The manifestations are in different industries and sectors including agriculture.

Lois Muraguri, *et al*⁴³ argue that there are various IP issues relating to agriculture which include Plant Breeder's Rights (PBRs), agriculture biotechnology, and issues relating to access to Plant Genetic Resources (PGRs) and the conservation of biodiversity.⁴⁴ They proceed to argue that intellectual property is essential to development of any agricultural sector especially in allowing the farmers access better plants or seeds that are pests resistant and better their yield. They also acknowledge that there is an established law in that recognize and protect plant breeders' rights in Kenya. This is the Seeds and Plant Varieties Act and the various regulations made there under. There is however no analysis of or an examination of how these rights are acquired in various subsectors of agriculture in Kenya or how the law has assisted farmers to access better plants or seeds.

Niels Louwaars and others in *Breeding Business* argue that plant breeding plays relevant roles in various sectors of a country including food, trade environment among others.⁴⁵ They use the term 'healthy' to describe a breeding sector that is innovative, profitable, accountable and robust.⁴⁶ They conclude by proposing implementation of various policies across different sectors

⁴⁰ Cornish W. R, *Intellectual Property* (3rd edn) Sweet & Maxwell 1996

⁴¹ Cornish W. R, *Ibid*

⁴² Cornish W. R, *Ibid*

⁴³ Lois Muraguri, Richard Boadi and Moni Wekesa, 'IPRs, Agriculture and Food Security' in Ben Sihanya and Moni Wekesa (eds), *Intellectual Property Rights in Kenya*; Konrad Adenauer Stiftung & Others, 2009

⁴⁴ Lois Muraguri, *Ibid*

⁴⁵ Louwaars. Niels., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

⁴⁶ Louwaars. Niels, *ibid*

including legal, development and economic sectors.⁴⁷ Some of these policies may not be applicable to the Kenyan agricultural sector as they proceed on the basic assumption that the seed sector is a private sector business. However, with appropriate modifications, these recommendations can as well be applied in Kenya. The authors correctly argue that innovative plant breeding plays important roles in the society such as food security, environment, sustainability and a number of transitions in the rural areas to ‘biobased’ economies.⁴⁸ Netherlands where this study is based has one of the largest plant breeding sectors whose contribution is mainly in horticultural crops especially ornamentals and vegetable crops.

In an article titled ‘*Plant Variety Protection in developing countries: A report from the field*’ Robert Tripp and others argue that developing countries have various options available to them to offer protection to plant breeders both from competing firms and from on-farm seed saving.⁴⁹ They argue that there is need to develop or establish appropriate PVP system in developing countries as part of broader strategy to achieving seed sufficiency necessary for food security.⁵⁰ However, the article notes that many of the developing countries including Kenya where PVP system has been in place for a long time, the number of field crops varieties seeking protection is more modest and most PVP certificates have been issued for ornamentals.⁵¹ People do not feed on flowers but they contribute to the income available to buy food. The assumption here is that the flowers are grown by most if not all farmers and also that all flowers have economic value. This is not necessarily the case. The writers therefore encourage developing countries policy makers to adopt PVP as a tool for achieving national agricultural development goals.⁵² Meeting these goals however requires understanding of the circumstances’ of the different classes of farmers, an analysis of the requirements of the different types of commodities and capacity to

⁴⁷ Louwaars. Niels, *ibid*

⁴⁸ Louwaars. Niels, *ibid*

⁴⁹ Tripp. R, Louwaars. N and Eaton. D, *Plant Variety Protection in developing countries: A report from the field* Elsevier Ltd (2005)

⁵⁰ Tripp, *ibid*

⁵¹ Tripp, *ibid*. The applications are also dominated by foreigners specifically by applicants from the European countries

⁵² Tripp, *ibid*

target IPR regimes accordingly.⁵³ In so doing the establishment of an IPR regime in agriculture will not be seen as an obligation from the industrialised countries but as a step towards achieving their national agricultural development goals.

The mandate to provide for protection of new plant varieties is mainly drawn from the Agreement on Trade Related Aspects of Intellectual Property (TRIPS Agreement) which makes it mandatory for the WTO Member States to ‘provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by a combination thereof’.⁵⁴ The implementation period of this obligation is however varied depending on the development status of each State. This article has been interpreted differently especially with regard to the meaning of the requirement for a *sui generis* system for protection of new plant varieties.⁵⁵ The two main arguments have been that the article allowed the member states to adopt the already existing UPOV system or to create an independent system altogether.⁵⁶ India has adopted the latter and enacted an independent law called the Plant Varieties and Farmers’ Rights Act.

When reporting on the status of the *sui generis* system for plant variety protection in India Biswajit Dhar argues that the objectives of the Plant Varieties and Farmers’ Rights Act is to comply with India’s obligations under Article 27.3 (b) under the TRIPS Agreement.⁵⁷ First this Act unlike the UPOV Convention offers Indian farmers legal ‘rights’ protected under the law as opposed to ‘privileges’ under Article 15.⁵⁸ The Act offers protection three forms of varieties- new varieties, extant and farmer varieties.⁵⁹ He argues the flexibility of this law has obligated the

⁵³ Tripp, *ibid*

⁵⁴ The TRIPS Agreement was signed by all World Trade Organisation (WTO) who undertook to implement minimum standards for protection of wide range of intellectual property rights including making provisions for the protection of new plant varieties. For more details see the TRIPS Agreement Article 27 thereof.

⁵⁵ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

⁵⁶ Dutfield G, *Ibid*

⁵⁷ Dhar B, “*Sui Generis Systems for Plant Variety Protection: Options under TRIPS*” Discussion Paper Quno (2002)

⁵⁸ Article 15 of the UPOV 1991 Convention allows member states to give farmers the ‘privilege’ of using the protected variety for further breeding or propagation. This is to be done within the legitimate interests of the breeder meaning the interests of the breeder come before those of the farmer. Such provisions of the Convention have been considered to be a hindrance to food security and limit the farmer’s capacity to access seed.

⁵⁹ Biswajit, *ibid*

State to recognize and protect the rights of farmers who are also plant breeders in India.⁶⁰ Biswajit encourages countries in the process of enacting legislation on PVP to take the realities of the farming communities' into consideration and seek to strike a balance between plant breeders in the formal sector and traditional farming communities.⁶¹ This will ensure that the PVP Law protects all stakeholders including the farmers, breeders and the society.

The above however cannot be said of Uganda where there is no PVP law in place. The 2004 Plant Variety Protection Bill was assented to by President Yoweri Museveni in June 2014 but is yet to be fully operationalised as a the date of this work.⁶² Uganda economy is reliant on agriculture and the debate has been on whether or not the proposed law will protect their interests from the shrewd seed companies.⁶³ Uganda and Namibia are Member States to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) which mandate the Member States to recognize the rights of farmers from all regions of the world.⁶⁴ The objectives of this Treaty include conserving and ensuring the sustainable use of plant genetic resources for food and agriculture for sustainable agriculture and food security.⁶⁵ Uganda and Namibia are concerned about fulfilling their international obligations including under the TRIPS Agreement and at the same time ensuring that its agricultural industry is protected.

Devlin Kuyek criticizes the whole intellectual property rights system in agriculture as being a hindrance to achievement of food security in Africa and in developing countries as well.⁶⁶ He argues that African countries have been forced to choose between two conflicting paths of

⁶⁰ Biswajit, *ibid*

⁶¹ Biswajit, *ibid*

⁶² See <http://www.seatiniuganda.org/the-plant-variety-protection-act-2014/> accessed on 25th November, 2014 at 11.25 am

⁶³ Advocates Coalition for Development and Environment, "Towards Plant Variety Protection in Uganda: Status and Emerging Issues" Advocates Coalition for Development and Environment (2013)

⁶⁴ This law concentrates more on community rights, farmers' rights and benefit sharing.

⁶⁵ The Preamble to the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA) available at <ftp://ftp.fao.org/docrep/fao/011/i0510e/i0510e.pdf> accessed on 25th November, 2014 at 11.41 am. The Namibian Access to Biological Resources and Associated Traditional Knowledge Act, 2001; available at <http://www.mti.go.na/> as accessed on 4th August, 2014 at 22.00 hours

⁶⁶ Kuyek, Devlin, *'Intellectual Property Rights in African Agriculture: Implications for Small Farmers'* Genetic Resources Action International (GRAIN), August 2002

agricultural research and development with one side rooted in knowledge and practices of the farmers or one dependent on the products of the Northern Corporations.⁶⁷ This argument is somehow supported by the high number of PBR grants to foreigners as compared to the dismal number of grants in favour of Kenyans. Kuyek's concern on food security may be justified by a comparison of the PBR grants in the food crops and ornamental subsectors in Kenya. This is of course based on the assumption that the number of grants and applications represent the extent of breeding in the country. He sees the seed industry's push for IPRs is an attempt to increase control over the seed industry for crops that generate significant returns such as export oriented horticultural market in Kenya and hybrid maize market in southern Africa.⁶⁸ Such approach by the breeders seriously affects food security.⁶⁹

However, the IPR system and in particular the PBRs system has various exceptions such as allowing the farmer to save the seed for replanting as long as the same is not for commercial purpose. Such exceptions somehow ensure that farmers do not lack seeds thus threatening food security but they are not adequate. In addition, the TRIPS Agreement which is one of the most comprehensive laws on intellectual property has various flexibilities which allow Member States to exclude certain manifestations from protection as exclusive individual prices. Such flexibilities include compulsory acquisition where a State can compulsorily acquire a technology which is protected under IP in certain circumstances'.

As part of its mandate under the Seeds and Plant Varieties Act, KEPHIS reports the number of PBRs applications it has received, grants issued and applications withdrawn or rejected in every financial year.⁷⁰ It is notable from these reports that the ornamentals subsector has significant activity in terms to the number of applications for PBRs compared to other subsectors including

⁶⁷ Kuyek, ibid

⁶⁸ Kuyek, ibid

⁶⁹ The World Food Summit in 1996 defined food security as the situation where all people at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. available at http://www.fao.org/wfs/index_en.htm as accessed on 4th August, 2014 at 22.00 hours

⁷⁰ Kenya Plant Health Inspectorate Service (KEPHIS) reports available at <http://www.kephis.co.ke/reports> as accessed on 20th July, 2014 at 21.45 hours

the food crops. It is also notable that the majority of these applications are from foreign countries and in particular the Netherlands. In the food crop subsector KARI⁷¹ dominates the KEPHIS reports in terms of new applications and grants. However, the majority of the applications by KARI are for hybrid maize and not parental varieties. There are no applications from individual farmers seeking protection for parental varieties they develop. These results are there despite the fact that the law is available and does not exclude them from protection. There is no literature addressing and this is the gap that this research seeks address.

1.8 Research Methodology

It is proposed to achieve the objectives of this research mainly through collection of secondary data in the form of information gathered in the library and on the internet. The information gathered from the KEPHIS annual reports on the number of plant breeders' rights applied for and granted in Kenya will be analysed against literature available in support of the PBR system. To collaborate this information, the researcher has sought the opinion of the experts in the field and their response is presented through key informant guides which form the appendix to this research. This primary data will be on specific and limited issues under consideration in the research and will be collaborated by the secondary data collected.

The research shall examine the available literature in the form of scholarly writings, international instruments, policy documents and guidelines, reports and studies conducted by various organizations and governments, legal opinions and commentaries written on the effectiveness of PBRs in agriculture sector. The work will also focus on the various laws, recommendations, policy framework and declarations made by organisations such as the UN and UPOV; various

⁷¹ Kenya Agricultural Research Institute, a State Corporation whose mandate was to bring together research programmes in food crops, horticultural and industrial crops, livestock amongst others. More information on this is available at <http://www.kari.org/> as accessed on 20th July, 2014 at 21.45 hours. This organisation has since been replaced by the Kenya Agricultural and Livestock Research Organization (KALRO) which was established by the Kenya Agricultural and Livestock Research Act of 2013 with the mandate of establishing a suitable legal and institutional framework for coordination of agricultural research in Kenya. More information on this organisation is available at http://www.kalro.org/about_us accessed on 25th November, 2014 at 12.07 pm.

laws adopted by different countries both developed and developing all in a bid to make the plant breeders rights system effective in their specific jurisdictions.

The above literature will be analysed correlatively to determine the relationship between the DUS tests set under the Seeds and Plant Varieties Protection Act for grant of PBR and the number of PBR applications for food crops reported yearly by KEPHIS. The data on the DUS test collected from other jurisdictions will be compared against the one available in Kenya also to establish whether or not there is any effect of the test to the number of PBR applications sought and granted in the specific countries especially in the food crop subsector.

1.9 Limitations to the study

- i. There is no formal record of the varieties developed by plant breeding that is undertaken by farmers or varieties in Kenya. The study shall therefore have rely on secondary source of for such information;
- ii. There is abundant literature on plant breeders' rights and the benefit to be derived from the system especially in favour of agricultural research. However, none of this literature provides an analysis of the system in regard to the food crop subsector in Kenya. The study therefore shall rely on limited secondary sources;
- iii. Limitation of time. More time to carry out this research, the researcher would have planned to visit and conduct interviews with various farmers who double up as plant breeders across the country and collect more data on the subject;
- iv. The researcher is a practitioner with a bias to industrial property and it is possible that her personal opinion on the subject may affect the findings of the research.

1.10 Assumptions

The study proceeds on the following major assumptions:-

- i. That the subsistence farming is on food crops only and the farmer always double up as a plant breeder;
- ii. That an increased number of PBR applications and grants by Kephis will be representative of an increase in amount of plant breeding in Kenya;

- iii. That the plant breeding of new varieties in food crops by farmers can be increased by promising a reward in the form of plant variety protection;
- iv. That it is possible under the Seeds and Plant Varieties Act to have separate tests set and applied for food crop varieties and ornamental varieties.

1.11 Chapter Break down

This study is divided into five chapters. Chapter one gives the background information on the research problem, the significance, objectives and limitations of the study. The theoretical framework and the available literature on the subject of the study will be discussed under this chapter. Chapter two shall trace the history, nature, rationale and significance of plant breeding. Plant Variety Protection and the various ways of how new plant varieties can be protected under the law both internationally and locally will be discussed under this chapter. Chapter three focuses on the legal framework of PBRs with specific reference to the standards set for granting PBRs and the effect this has to the status of PBRs applications and grants in Kenya's food crops and ornamentals' subsectors. Chapter four shall contrast the standards set for granting PBRs in Kenya with those of two other developing countries in the form of a comparative study. The effect of these standards shall be analysed with regard to the plant breeding sector and in particular the food crops and ornamental subsectors. Chapter five contains the conclusion and recommendations of the study and in particular it addresses favourable policies that Kenya can adopt to enhance the status of the PBRs.

1.12 Dissemination

This paper proposes to disseminate its findings and recommendations in academic and professional journals with the expectation that the findings and recommendations will be considered by the key players in the sector including the devolved and central governments, industry players and regulators such as KARLO, KEPHIS and farmers.

CHAPTER TWO

2.0 Plant Breeding and Protection for New Plant Varieties

2.1 Plant Breeding

Plant breeding is the process of generating, developing or producing new plant varieties with better or new desirable features.⁷² It is an art and science of crossing and selecting new and better plants from the existing ones.⁷³ Plant breeding can be coincidental or purposeful where a breeder undertakes specific research on varieties in a bid to develop a new variety. Purposeful plant breeding is characterised by continuous innovations and research to develop new varieties that meet the requirements of producers and consumers.⁷⁴ It is a field of applied research which applies different techniques and methods from different disciplines.⁷⁵

Plant breeding can be undertaken by both private and public sectors and in many developing countries plant breeding is largely a public sector activity with few private breeders'. In Kenya, plant breeding is centrally coordinated by Kenya Agricultural Research Institute (KARI), now Kenya Agricultural and Livestock Research Organization (KARLO), and through domestic and international public sector institutions that include the Kenya university system amongst others.⁷⁶

2.2 History and Nature of Plant Breeding

Plant breeding is an activity that goes back up to the 1800s where new varieties were developed by farmers through trial and error selection by the farmers mostly with seed saved from the

⁷² Watal. J "Intellectual Property Rights in the WTO and Developing Countries" , Kluwer Law International, (2001)

⁷³ Sikinyi E, 'Plant Variety Protection (Plant Breeder's Rights in Kenya' in Ben Sihanya and Moni Wekesa (eds), *Intellectual Property Rights in Kenya* (Konrad Adenauer Stiftung & Others, 2009)

⁷⁴ Louwaars. N., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

⁷⁵ Louwaars.N. *ibid*

⁷⁶ Rangnekar. D, "Accessing the Economic implications of different models for implementing the requirement to protect plant varieties: A case study of Kenya" Centre for the Study of Globalization and Regionalization The University of Warwick, 2006

previous season.⁷⁷ The main purpose for the farmer in this era was to ensure that the crop yields enough harvest for his consumption or sustenance and also for planting purposes of the next season. The breeding was mainly on the farm and therefore informal as there were no established structures either in legal or physical form. Currently plant breeding is undertaken professionally but for similar objectives. Technology is being used to introduce or eliminate traits that increase resistance to weather, pests and which generally increase the productivity of the resulting plant.⁷⁸ This form of plant breeding has resulted into various new varieties including hybrids whose genes are manipulated to restrict its seeds from yielding as much when replanted. This means that the farmer has to purchase ‘new’ seeds from the breeder every time he has to plant.

Professional plant breeding focuses on large scale commercial farmers who sometimes also act as the breeders’. These breeders often focus on varieties that will have high market value and also have high yields under specific conditions as this would guarantee profit. Most of the variety breeding and testing is conducted in established laboratories and farms before being released into the market.

The professional plant breeding has however not extinguished farmer or small scale plant breeding undertaken by the small scale farmers and many of these farmers remain highly innovative.⁷⁹ Farmer’s varieties or landraces are usually selected for a range of traits and are not genetically uniform thus retaining the objectives of harsh weather resistance and pests amongst others.⁸⁰

2.3 Different Plant Breeding Techniques

There are various breeding techniques which are undertaken by plant breeders depending on diverse factors including the technological know-how involved, resources available and the purpose of the activity. In all techniques however, there are the basic stages which are

⁷⁷ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

⁷⁸ Supra note 22

⁷⁹ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

⁸⁰ Ibid

undertaken during the process. These are the formulation of the breeding objectives, creation of variation, selection and testing and finalising varieties for the market.⁸¹

Crossing and selecting is the most basic technique of plant breeding.⁸² Selection is the picking out of plants with desirable qualities or traits while crossing involves the putting together or combining two or more of the selected plants to produce a new variety of plant.⁸³ It is a lengthy process with high costs and its success is largely dependent on the expertise of the breeder in selecting the plants with desirable qualities.⁸⁴ This process can be repeated as many times and with many varieties until the desired variety is generated ready for planting. The process works best with self fertilizing crops such as wheat, rice and beans.⁸⁵

Before the introduction of formal breeding, new plant variety development and generation was dependent on selection and experimentation by farmers.⁸⁶ In recent times, molecular biological techniques have been introduced in formal breeding and are increasingly being used in the selection phase making selection more efficient and effective.⁸⁷ The selected varieties are then crossed to create a new variety. This can be done through various ways including grafting and molecular techniques.⁸⁸

Tissue and cell culture development is a technique that enables mass regeneration of genetically identical plants.⁸⁹ The regeneration occurs on already selected plants with desired traits.

⁸¹ Louwaars. N., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

⁸² Dutfield, Ibid. For more details on the nature of breeding please refer to http://www.upov.int/about/en/upov_system.html accessed on 4th August, 2014 at 18.00 hours

⁸³ Dutfield, Ibid

⁸⁴ Louwaars. N, note 81

⁸⁵ Dutfield, note 82

⁸⁶ Commission on Intellectual Property Rights, “*Integrating Intellectual Property Rights and Development Policy*”, London September 2002

⁸⁷ Louwaars. N, note 81 and Commission on Intellectual Property Rights *ibid*

⁸⁸ Louwaars. N, note 81

⁸⁹ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

Molecular biology breeding involved introduction of desired genes to the breeding material to form new plant species.⁹⁰ The process could also result in formation of different forms of lives altogether.⁹¹ The introduction of the foreign genes into an existing breeding material is also referred to as genetic engineering.⁹²

2.4 Protection of New Plant Varieties through Intellectual Property

The varieties generated from the above techniques may have a reproductive material that makes them distinctive from each other. The technique chosen by the breeder may yield larger quantity of a substance having purity and uniformity that are very hard to achieve by extraction from nature.⁹³ This is the substance that differentiates the new varieties from the existing ones. The process culminating to the creation of the substance involves human intellect, skill and art. Protection of the substance therefore enables the breeder to ‘own’ it even propagated through plants that he does not own. Plant breeding and the new variety are recognized and protected through a formal process of granting exclusive rights to the plant breeder.⁹⁴ Exclusive rights vested in the plant breeder have a specific scope and terminates after a period of time⁹⁵ after which they fall into the public domain.

Intellectual property protection offers legal protection to plant related materials in the form of:-

- a. The United States model of plant patents which are distinct from normal (utility patents);
- b. Through allowing normal patents on plants or parts thereof such as cells;
- c. Through patenting plant varieties as is the practice in the United States and in other few countries;
- d. Through applying a *sui generis* form of plant variety protection (PVP) such as plant breeders’ rights or other modalities;

⁹⁰ Dutfield, Ibid

⁹¹ Dutfield, Ibid

⁹² Dutfield, Ibid

⁹³ Cornish W. R, *Intellectual Property* (3rd edn) Sweet & Maxwell 1996

⁹⁴ International Intellectual Property Law and Policy, “Intellectual Property and Information Wealth: Issues and Practices in the Digital Age” Vol. 4

⁹⁵ See sections 19 and 20 of the Seeds and Varieties Act, Chapter 326 of the Laws of Kenya

- e. Through allowing patents on DNA sequences and gene constructs including gene, plants transformed through those constructs, the seed and progeny of those plants.⁹⁶

Other kinds of intellectual property rights such as trademarks and copyrights may also offer additional but not basic protection to the variety to plant breeders. In most cases, these forms of protection are available for the final propagating material to be distributed to the public. The technique applied may also be used by the proprietor as a trade secret.

Protection of new plants can also be through use of technology that ensures that the variety does not replicate or when it does, the results are not the same as those of the first variety.⁹⁷ The variety has an inbuilt protection mechanism which is only possible through technology. Crops such as commercial maize hybrid cannot be reused if the hybrid yield and vigour are to be maintained.⁹⁸

2.4.1 Rationale for protection of new plant varieties

Legal protection of the variety in whatever form vests in a breeder proprietary rights which are enforceable against third parties including the state. Once conferred, the rights holder can exclude third parties from using the propagating material without his authority.⁹⁹ The State bestows property on an owner who then carries a small piece of the State power.¹⁰⁰ This power makes a property rights good against the world meaning that the owner can invoke the power of the State to enforce the right and there is no need for a pre-existing relationship between the owner and third parties person for the owner to bring them to account for violating the property right. The right in case of protected new varieties extends to the production, reproduction

⁹⁶ Commission on Intellectual Property Rights, “*Integrating Intellectual Property Rights and Development Policy*”, London September 2002

⁹⁷ This is the case for hybrids. The Commission report, note 95 above, defines a hybrid variety as a variety marketed through seed as the offspring of two different varieties of plant.

⁹⁸ Commission on Intellectual Property Rights, *ibid*

⁹⁹ Sikinyi E, note 73 above

¹⁰⁰ Merges, Robert P. *Justifying Intellectual Property*, Harvard University Press, Cambridge, Massachusetts London, England (2011)

conditioning for the purpose of propagation, offering for sale or any other marketing activity, exporting or importing and stocking of the propagating material.¹⁰¹ The only connection when the owner is enforcing any of these rights is that the owner and the other person are subject to the law of the same State.¹⁰²

Protection of new plant varieties in whichever form is mainly justified by the argument that it is an incentive for research and development. Plant variety protection provides incentive for research and development by enabling the breeders' recoup their costs of research and development of the improvements to the pre-existing plants.¹⁰³ The World Intellectual Property Office (WIPO) justifies the granting of property rights to inventions as to give expression to the moral sentiment that a creator should enjoy the fruits of their creativity and also to encourage investment of skill, time, finance and other resources into innovation in a way that is beneficial to the society.¹⁰⁴ The property rights granted to the creators are time limited and are for they are in regard to control and use of those products.¹⁰⁵

The rights are considered as a bargain between the State and the owner of the invention whereby the owner discloses the invention to the State in exchange of the monopoly of exploiting. The assurance of protection in the form of monopoly of encourages the development or creation of new technology and art for the society.¹⁰⁶ This way the creators are assured of an opportunity to recoup their investment.¹⁰⁷ Questions have however been raised as to whether this is really the

¹⁰¹ Sikinyi E, note 73 above

¹⁰² Merges, Robert P, note 100 above

¹⁰³ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

¹⁰⁴ WIPO Intellectual Property Handbook: Policy, Law and Use, WIPO Publication No. 489, available at: <http://www.wipo.org/about-ip/en/iprm/pdf/ch1.pdf> as accessed on 30th July, 2014 at 18.00 hours

¹⁰⁵ WIPO Handbook, ibid

¹⁰⁶ Sikinyi E, note 73 above

¹⁰⁷ Sikinyi E, note 73 above

case and what then should be the role of farmer's especially in regard to conservation and development of plant genetic resources.¹⁰⁸

The most important law concerning the protection of plant varieties came with the Agreement on Trade Related Aspects of Intellectual Property Rights (TRIPS).¹⁰⁹ Article 27 (3) requires member States to provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by combination of both.¹¹⁰ The choice of the system to use to protect breeders' is mainly individual country's decision and different countries have adopted different approaches. A State may opt to have PBRs or Patents only or combine the two.

2.4.2 Protection of new plant varieties through patents

Patents on plant varieties are only allowed in the United States, Japan and Australia¹¹¹. They are however prevalent in the United States¹¹². The US Plant Patent Act was enacted in 1930 and it provided for the protection of vegetatively propagated materials which have not been developed to utility patents¹¹³. To get a plant patent, an applicant must satisfy the examiner that the plant is novel, not obvious, stable and is industrially applicable i.e. it has utility¹¹⁴. However, the test for non obviousness is not as stringent as other ordinary patents¹¹⁵.

¹⁰⁸See the Commission on Intellectual Property Rights, note 31 above where it is submitted that the farmer's contribution to the conservation and development of plant genetic resources should be recognized and preserved.

¹⁰⁹ TRIPS Agreement was negotiated under the World Trade Organization (WTO) and it is signed by all WTO member countries. It came into effect in 1995 and it covers all aspects of intellectual property. It is considered the most comprehensive multilateral agreement on intellectual property negotiated under the WTO

¹¹⁰ Article 27 (3) (b) of the TRIPS Agreement, Available at http://www.wto.org/english/tratop_e/trips_e/t_agm3_e.htm as accessed on 30th July, 2014 at 20.00 hours

¹¹¹ Dutfield G, note 103

¹¹² Dutfield G, note 103

¹¹³ Dutfield G, note 103

¹¹⁴ For more details on plant patent visit <http://www.uspto.gov/web/offices/pac/plant/#2> as accessed on 18th November, 2014 at 22.00 hours

¹¹⁵ Commission on Intellectual Property Rights, "Integrating Intellectual Property Rights and Development Policy", London September 2002

Patents are the strongest form of intellectual property protection that a breeder can obtain over the patented material.¹¹⁶ Rights granted under patents allow the patent holder to restrict the rights of any person including farmers, to sell or reuse the seed they have grown; other breeders can also not use the patented material or technology even for further research or breeding purposes without the authority of the patent holder.¹¹⁷ Monsanto, an international biotechnology company in 2004 successfully enforced its patent rights against a farmer who had planted seed which had patented gene saved from a previous crop.¹¹⁸ The court specifically held that the defendant infringed the plaintiff's patent by saving seed from a previous crop and proceeding to plant it.¹¹⁹ The infringement by the farmer extended to the selling of the subsequent seed from harvested from the saved seed.¹²⁰

The rights granted to a plant patent holder are capable of extinguishing the farmer's rights as well as creating a dependence syndrome on the breeders.¹²¹ Correctly so, these rights have seen the development of 'terminator' or 'traitor' seeds which do not germinate or express certain traits unless sprayed with specific chemicals that act to stimulate the active genes.¹²² Sixty patents for such technologies have already been granted.¹²³

¹¹⁶ Commission on Intellectual Property Rights, *ibid*

¹¹⁷ Commission on Intellectual Property Rights, *ibid*

¹¹⁸ ***Monsanto Canada Inc. v. Schmeiser*** [2004] 1 S.C.R. 902, 2004 SCC 34

¹¹⁹ Monsanto case, *ibid*

¹²⁰ Monsanto case, *ibid*

¹²¹ Kuyek, Devlin '*Intellectual Property Rights in African Agriculture: Implications for Small Farmers*' Genetic Resources Action International (GRAIN), August 2002

¹²² Kuyek, Devlin, *ibid*

¹²³ Action Aid et al, *Syngenta: Switching off Farmer's Rights?*, ActionAid, GeneWatch UK, Berne Declaration and the Swedish Society for Nature Conservation, October 2000. Available at <http://www.actionaid.org.uk/> as accessed on 31st July, 2014 at 05.00 hours

2.4.3 Protection of new plant varieties through Plant Breeders' Rights

Plant breeders' rights are a bunch of exclusive rights granted to a breeder over propagating materials of a plant.¹²⁴ A breeder is defined as he who bred or developed or discovered a variety.¹²⁵ The right is however granted to a variety that is new, stable, distinct and uniform.¹²⁶ PBRs were introduced recently in the 1950s and 1960s and are designed to cover the production or development of new varieties by standards methods such as cross-pollination, hybridisation and grafting.¹²⁷

PBRs as a form of protection of new plant varieties differ from the 'conventional' patent law mainly in the standards set for protection and the scope of rights covered. PVP is specifically designed for plant varieties and grants breeders monopolistic rights in a propagating material of a new plant variety that they have developed.¹²⁸ There is no equivalent test for non-obviousness or the inventive step and the utility or industrial applicability usually required by the patenting system over any innovation.¹²⁹ The low threshold for protection under this system enables breeders to protect varieties with similar characteristics with minimal variations to the variety.¹³⁰

In terms of scope of rights granted, PBRs are a *sui generis* form of plant variety protection as they are a form of intellectual property (IP) that has several exemptions that would be considered as infringement under the conventional intellectual property regime.¹³¹ It is a specific IP regime to new plant varieties.

¹²⁴ See Article 14 of the International Convention for the Protection of New Varieties of Plants, Act of 1991 (UPOV Convention). Available at <http://www.upov.int/en/publications/conventions/1991/act1991.html> as accessed on 31st July, 2014 at 17.05 hours

¹²⁵ Article 1 of the UPOV Convention

¹²⁶ Articles 5 of the UPOV Convention

¹²⁷ Cornish W. R, *Intellectual Property* (3rd edn) Sweet & Maxwell 1996

¹²⁸ Dufield G, *Food, Biological Diversity and Intellectual Property: The Role of the International Union for the Protection of New Varieties of Plants (UPOV)*. Quno, February 2011

¹²⁹ Commission on Intellectual Property Rights, "*Integrating Intellectual Property Rights and Development Policy*", London September 2002

¹³⁰ Article 15 limits the right of a breeder to the use of a protected variety to develop another variety.

¹³¹ For instance, farmers are allowed to save seed which has been harvested from planting propagated material of a protected variety. This is under Article 15 (2) of the UPOV Convention, Act of 1991. In the *Monsanto Canada*

The main legal framework for the PBRs system is housed by the International Convention for the Protection of New Varieties which is one of the international legal regimes on intellectual property. The international regime of protection of plant breeder's rights is justified mainly by the argument that when the breeders are assured of protection of their rights in other countries they become more willing to make their varieties available there.¹³²

2.5 History of the UPOV Convention

The debate on protection of new plant varieties in a different form other than patents began with breeders in Europe who considered patent law as unsuitable for this purpose.¹³³ The first diplomatic conference for the UPOV was held in 1957 which was informed by the general view that there was need for a 'special law' different from patent law to protect new plant varieties.¹³⁴ The participating countries set out the broad contours of what became the Convention and entrusted France to continue with the work.¹³⁵ These European Countries eventually created a harmonized system for plant breeder's rights which are mainly rooted in the agricultural tradition and take into account the biological nature of the subject matter.¹³⁶

Inc. v. Schmeiser Case (See note 49 for full citation) the defendant did this but was sued for patent infringement as the propagated material was protected under 'conventional' IP law i.e. patent law.

¹³² Dutfield G, note 128

¹³³ Watal, J "Intellectual Property Rights in the WTO and Developing Countries", Kluwer Law International, (2001)

¹³⁴ Dhar Biswajit, *Sui Generis System for Plant Variety Protection-Options under TRIPS*, Quno, April, 2002. The participants at the conference were eight European countries including Belgium, France, Federal Republic of Germany, Italy, The Netherlands, Sweden, Switzerland and the UK.

¹³⁵ Dhar Biswaji, *ibid*

¹³⁶ Louwaars N, De Jonge B & Munyi, P 'Intellectual Property Rights in the plant sciences and development of goals in agriculture: A historical perspective' in *Knowledge Management and Intellectual Property: Concepts, Actors and Practices from the Past to the Present* (eds) Strathis Arapostathis & Graham Dutfield, Edward Elgar publishing Limited, UK (2013)

The International Convention for the Protection of New Varieties was first adopted in 1961 after it was ratified by three countries who then became the Union Members.¹³⁷ Inevitably the Convention was conceived and designed in European and with European commercial breeding and generally the agriculture sector's interests in mind.¹³⁸ The Convention has been revised severally with the current version being the 1991 Act.¹³⁹ The membership of the Union has also increased to seventy two Member States.¹⁴⁰ The Convention in its formative days had membership comprised of European countries only but this has gradually changed to include even the developing countries, the same breeding interests continue to dominate the operations of the Convention today.¹⁴¹

The Convention received a major boost in 1995 when the Trade Related Aspects of Intellectual Property (TRIPS) Agreement took effect as it made it mandatory for the member States to 'provide for the protection of plant varieties either by patents or by an effective *sui generis* system or by a combination thereof'.¹⁴² Although TRIPS did not specifically state that the UPOV system was the *sui generis* system to be adopted, the discussions and the statements issued by World Trade Organisation Council for TRIPS in 2002 was to the effect that membership to UPOV was required for the member State to be considered to have complied with the provisions

¹³⁷ The Convention came into force in 1968 and it is named UPOV a French acronym for *Union internationale pour la protection des obtentions végétales*. For more details visit http://www.upov.int/about/en/upov_system.html as accessed on 31st July, 2014 at 18.00 hours

¹³⁸ Dutfield G, note 128

¹³⁹ International Convention for the Protection of New Varieties of Plants, Act of 1991 is the current version which was revised in 1972, 1978 and now 1991.

¹⁴⁰ It is notable that there are some countries which have ratified the 1978 Act but not the 1991 Act. As a country, Kenya ratified the 1978 and 1991 Conventions and has subsequently enacted the Seeds and Plant Varieties Act, Cap 326. For more details on this please see <http://www.upov.int/members/en> as accessed on 31st July, 2014 at 18.00 hours

¹⁴¹ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

¹⁴² The TRIPS Agreement was signed by all World Trade Organisation (WTO) who undertook to implement minimum standards for protection of wide range of intellectual property rights including making provisions for the protection of new plant varieties. For more details see the TRIPS Agreement Article 27 thereof.

of TRIPs.¹⁴³ UPOV Secretariat and organisations such as ASSINSEL,¹⁴⁴ have argued that UPOV model is the only effective *sui generis* model referred to by Article 27 as it provides the only internationally recognized *sui generis* system for the protection of plant varieties.¹⁴⁵ ASSINSEL has further argued that a *sui generis* system can only operate when the varieties to be protected are defined in terms of their uniformity, stability and distinctness.¹⁴⁶ The absence of these qualities in a variety makes it ‘vague and evanescent’ incapable of attracting the protection of the law as a legal right.¹⁴⁷

The Commission on Intellectual Property Rights has however argued that the effect of Article 27 was to allow the Countries to ‘choose an effective *sui generis* plant variety protection’ and that the one provided for under UPOV was one of them.¹⁴⁸ The question to be asked here is whether pursuant to the obligations set under the TRIPs Agreement a State has minimum standards of protection of new varieties of plants. The availability of a system that can offer protection for new plant varieties is the sole determinant of the effectiveness of the *sui generis* system.¹⁴⁹ Therefore, any system that can provide protection to new varieties of all the stakeholders

¹⁴³ UPOV (undated) International Harmonisation is essential for effective plant variety protection, trade and transfer of technology, UPOV Position based on an intervention in the Council for TRIPs, on September, 2002 as cited in Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* note 140

¹⁴⁴ This is an international Association of Plant Breeder’s for the Protection of Plant Varieties which was founded in 1938 and whose membership is comprised of individual organisations involved in plant breeding in both developing and developed countries. For more details on this organisation please visit <http://www.worldseed.org> as accessed on 18th November, 2014 at 23.00 hours

¹⁴⁵ Dhar Biswajit, *Sui Generis System For Plant Variety Protection-Options under TRIPs*, Quno, April, 2002

¹⁴⁶ Dhar Biswajit, *ibid*

¹⁴⁷ Dhar Biswajit *ibid*

¹⁴⁸ See Commission on Intellectual Property Rights Report, note 31 above where it is argued that the UPOV Convention is one of the systems that the developing countries may adopt but not the only one. Also the UPOV Convention has provided a ready-made legislative framework which has disadvantaged developing countries as it was designed with the developed countries in mind and it also does not take into account the peculiar circumstances of the developing countries.

¹⁴⁹ 1991 UPOV Convention, note 139 above

including those in formal plant breeding as well as the informal plant breeders in the form of farmers is an effective *sui generis* system under Article 27.¹⁵⁰

Article 1.1 of the TRIPS Agreement allows members States to implement the provisions of the Agreement in a more extensive manner and to adopt methods of implementation that are appropriate to their own legal system and practice. Such flexibilities support the argument that Article 27 on adopting a *sui generis* system was not limited to requiring States to adopt the UPOV System but it was leaving it to them to determine the criterion to be adopted to ensure that new varieties are protected. In exercising this option, the States could either opt to join the UPOV convention or develop their own system that would be appropriate to their legal system and practice. India followed this interpretation and developed a *sui generis* system that protects the formal and informal (read farmers) breeders.¹⁵¹

The UPOV system operates on the basis of specific requirements that are defined to allow for some flexibility when dealing with various plant species.¹⁵² The main advantage of the UPOV Convention is the reciprocal national treatment in protection of new plant varieties from member countries.¹⁵³ It also provides the basic principles of the substantive laws to be adopted by member a country which has a strong harmonizing effect on national laws of the members.¹⁵⁴

In conclusion, the option of having a *sui generis* system or patent system to protect new plant varieties is one of the various flexibilities under the TRIPS Agreement. Article 27 gave the option of using patent law as a form of protecting new plant varieties but also allowed the Member states to choose system that was not patent law and that was one of its kind mainly because of the exceptions contained under the PBRs System.¹⁵⁵ As a system however, UPOV is

¹⁵⁰ 1991 UPOV Convention

¹⁵¹ The 1991 UPOV Convention

¹⁵² Louwaars N, De Jonge B & Munyi, P ‘Intellectual Property Rights in the plant sciences and development of goals in agriculture: A historical perspective’, note 136

¹⁵³ Watal. J “Intellectual Property Rights in the WTO and Developing Countries” , Kluwer Law International, (2001)

¹⁵⁴ Watal J, Ibid

¹⁵⁵ Article 27 (3) (b) of the TRIPS Agreement

based on European breeding interests and is a perfect fit for the European farmers.¹⁵⁶ This is however the case for all farmers and breeders from other regions and Kenya in particular which is a member state of UPOV.

Under the UPOV Convention a variety can only be protected if it is novel, distinct, uniform and stable.¹⁵⁷ These standards were set with the formal breeding sector in mind and they effectively deny new varieties developed by farmers' protection. Kenya has adopted the UPOV Conventions and the various modifications thus these standards are applicable against all the varieties to be protected in Kenya. The next chapter explores each of these standards and their effect on the varieties developed by farmers.

¹⁵⁶ Dutfield G, note 140. He also notes that the European breeding interests continue to be involved in the operations of the Convention and the Union and have played a key role in encouraging more countries from all regions to join UPOV

¹⁵⁷ Article 5 of the 1991 UPOV Convention

CHAPTER THREE

3.0 Introduction

Plant breeders' right is a conditional proprietary right granted under the law to breeders for a limited period of time. It is granted by the State and allows the owner to exercise some level of State power against third parties including the State.¹⁵⁸ As such therefore the State sets the conditions that must be satisfied by an inventor before he can obtain the right. Once granted, the right serves as a form of recognition of the existence of the invention and protection under the law. These conditions are therefore set under the law and must be satisfied before any variety can be protected.

Kenya is a member state of the International Convention on Protection of New Varieties which has provides the basic framework of the substantive law to be adopted by Member States in their national laws.¹⁵⁹ The law applicable to plant variety protection in Kenya is the Seeds and Plant Varieties Act (the Act).¹⁶⁰ The Act adopts the criteria set under the 1991 International Convention on Protection of New Varieties¹⁶¹ for registrability and protection of new plant varieties. According to this Act plant variety must be new, distinctive, uniform and stable before they can be recognized and protected under the Act.¹⁶²

The recognition and protection of new plant varieties is in the form of Plant Breeder's Rights (PBRs) which are granted by the government through KEPHIS.¹⁶³ PBRs are only available to the

¹⁵⁸ Merges, Robert P. *Justifying Intellectual Property*, Harvard University Press, Cambridge, Massachusetts London, England 2011

¹⁵⁹ Watal. J "Intellectual Property Rights in the WTO and Developing Countries", Kluwer Law International, (2001)

¹⁶⁰ Chapter 306 (Revised edition, 2012) Laws of Kenya, available at <http://www.kenyalaw.org:8181/exist/kenyalex/actview.xql?actid=CAP.%20326> last accessed on 3rd September, 2014 at 21.16 hours

¹⁶¹ Mbote P. K, Intellectual Property Protection in Africa, 'An Assessment of Laws, Research and Policy Analysis on Intellectual Property Rights in Kenya'; International Environmental Law Research Centre, 2005; Available at <http://www.ielrc.org> last accessed on 20th July, 2014 at 21.16 hours

¹⁶² Section 18(3) and Part II of the Fourth Schedule of the Seeds and Varieties Act

¹⁶³ KEPHIS is mandated to administer plant breeders' right in Kenya and is also UPOV Liaison Office. KEPHIS, 'Annual Reports and Financial Statements June, 2012', 2013; please visit <http://www.kephis.org/> accessed on 20th July, 2014 at 19.00 hours for more details

person who breeds or discovers and develops a seed or plant variety or an employer of such a person.¹⁶⁴ The applicant for PBR must confirm to the State that he is either of these persons and where he is not the breeder, he must produce documentary evidence to prove his relationship with the breeder.¹⁶⁵ The protection is available to both Kenyan nationals and foreigners who receive equal treatment under the Act.¹⁶⁶

The application form must also be accompanied by an application fee payable to the government through KEPHIS.¹⁶⁷ An application cannot be examined before this fee is paid.

A plant variety on the other hand is defined as a plant grouping within a single botanical taxon of the lowest known rank, defined by the expression of the characteristics resulting from a given genotype or combination of genotypes distinguished from any other plant grouping by the expression of at least one of the said characteristics and considered as a unit with regard to its suitability for being propagated unchanged.¹⁶⁸ This definition informs the test to be subjected to the varieties submitted for registration. Once an application for PBR is received, KEPHIS has to examine the variety to confirm whether it is novel (new), distinct, stable and uniform and hence deserving of recognition and protection under the law.¹⁶⁹

The examination process may be undertaken by KEPHIS itself or in another country under UPOV.¹⁷⁰ The DUS tests are conducted for a period of two years either by KEPHIS or by the

¹⁶⁴ Section 2 of the Seeds and Plant Varieties Act; these rights are also available to a third person who is a successor in title to the breeder or to whom the breeder has assigned his right to.

¹⁶⁵ Pursuant to section 18 (1) the conditions laid down there must be satisfied by the applicant i.e. he must be the breeder or an employer of the person who bred the variety. The application form to be filled by the applicant required details of the breeder or his successor in title. These forms are available at <http://www.kephis.org/index.php/downloads-documents> accessed on 20th July, 2014 at 19.00 hours

¹⁶⁶ Article 4 of the UPOV Convention requires member States to accord same treatment to applicants from other member States as long as they comply with the procedures set under the laws of that country.

¹⁶⁷ This fee is currently USD 200 for all applicants. There is no distinction between local and foreign applicants. Where applicant wishes to make payment in local currency he has to convert the USD 200 to local currency at the prevailing rates before effecting the payment.

¹⁶⁸ Section 2 of the Act

¹⁶⁹ KEPHIS Report, *ibid*

¹⁷⁰ Mbote P. K, note 161

UPOV Member State office which has PVP.¹⁷¹ Where the tests are done in another country, KEPHIS does not conduct the test and relies on the examination report issued by the other UPOV liaison office.¹⁷² The process of examination of new varieties is relevant not only in obtaining a grant of PBR but also the government approval for the sale and distribution of the seeds developed from the variety.¹⁷³

The PBRs conditions are discussed in details below.

3.1 New (Novelty)

This requirement is also referred to as novelty. As a test, novelty is applicable across all forms of intellectual property including patents. However, relatively lower standards of novelty are applied against plant varieties confirm novelty.¹⁷⁴ A variety is considered new under the Act if at the date of filing of the application for breeder's right; propagating or harvested material of the variety has not been sold or otherwise disposed of to others with the consent of the owner for purposes of exploitation.¹⁷⁵ The flexibility also extends to the time of exploitation and in Kenya the variety must not have been sold or disposed one year prior to the application or four years outside Kenya.¹⁷⁶ The applicant is also expected to declare and confirm whether the variety has previously been sold or exploited and for how long.¹⁷⁷ Once KEPHIS receives an application for PBR, it has to conduct a search at the Kenyan Register of PBRs and at the UPOV level to confirm that the variety is not protected either in Kenya or elsewhere in the world.¹⁷⁸

¹⁷¹ Mbote P. K, *ibid*

¹⁷² Mbote P. K, *ibid*

¹⁷³ Cornish W. R, *Intellectual Property* (3rd edn) Sweet & Maxwell 1996; in Kenya after PBR is granted, the owner is then entitled to license seed companies to produce seeds containing the new and protected variety for purposes of commercialisation and distribution to farmers.

¹⁷⁴ Commission on Intellectual Property Rights, "*Integrating Intellectual Property Rights and Development Policy*", London September 2002

¹⁷⁵ Section 2 of the Part II of the Fourth Schedule of the Seeds and Varieties Act

¹⁷⁶ Section 2 (a) of the Part II of the Fourth Schedule, *ibid*; In the case of trees or vines, this period extends to six years

¹⁷⁷ Application form, available at http://www.kephis.org/index.php/downloads-documents/cat_view/8-plant-breeders%20right accessed on 20th July, 2014 at 19.00 hours

¹⁷⁸ Mbote P. K note 161

Under patent law, the test for novelty has higher standards and an innovation is considered novel if it is not anticipated by prior art.¹⁷⁹ Prior art is determined by the disclosures of the invention made either orally or in writing before the application was filed or from the date of priority.¹⁸⁰ It is irrelevant where or the reasons which informed such disclosure and as long as it was made twelve months prior to making the application or from the date of priority, the invention is considered prior art and hence not patentable.¹⁸¹

However, a variety is considered new and can be protected under the PBR System if it has not actually been sold or disposed off to third parties for purposes of exploitation.¹⁸² Strictly put, a breeder can share the information on the variety with third party without risking losing PBR protection as is the case for the patents. This flexibility allows for breeders to freely share information on varieties enabling others to build on another breeder's research to come up with a new variety.¹⁸³

3.2 Distinctiveness

The law requires every new variety to have at least one important characteristic that is distinct or different from any other existing variety.¹⁸⁴ The variety must be distinguishable from any other variety that whose existence is a matter of common knowledge.¹⁸⁵ The subject matter of protection by plant breeders' rights is biological in nature and it has capacity to propagate itself. Plants are products of nature and new plant varieties are developed from existing ones. Therefore for a breeder to be accorded protection, the variety bred must have some different characteristic

¹⁷⁹ Section 23 (1) of the Industrial Property Act, 2001

¹⁸⁰ Section 23 (2) of the Industrial Property Act

¹⁸¹ Section 23 (2) of the Industrial Property Act

¹⁸² Part II of the Fourth Schedule of the Seeds and Varieties Act, note 175

¹⁸³ This is also an exception to the breeder's rights under Article 15 (1) (iii) of the UPOV Convention and such use is not considered as infringement as is the case for patents

¹⁸⁴ KEPHIS, 'Annual Report and Financial Statements June, 2012', 2013; Available at <http://www.kephis.org> accessed on 20th July, 2014 at 19.00 hours

¹⁸⁵ KEPHIS Annual Report, ibid

or characteristics. This distinction from the existing varieties must also be apparent and sufficient to differentiate it from others.¹⁸⁶

The law also extends protection to discovery and development of new plant varieties as long as they met the set criteria. A breeder is defined as a person who bred or discovered and developed a variety.¹⁸⁷ The law therefore protects varieties resulting from both natural and artificial variations by the breeder.¹⁸⁸ In contrast, patent law expressly excludes discoveries from inventions capable of being patented.¹⁸⁹

The UPOV Convention and invariably the Seeds and Varieties Act, does not provide a definition of what is to be considered ‘clearly distinguishable’ or ‘sufficiently distinguishable’ to warrant protection of a new variety. The UPOV Secretariat however provides some examination guidelines (UPOV Guidelines) that provide the principles to be used when examining distinctness.¹⁹⁰ According to these guidelines, the question of distinctness can be determined by comparison of the new varieties with the existing varieties or using the varieties characteristics.¹⁹¹ The comparison of the new varieties assists in establishing whether or not the variety is a matter of common knowledge and is not limited to national or geographic borders.¹⁹² The comparison can be undertaken individually or in groups of the variety.¹⁹³ Where the variety is considered sufficiently different, the individual comparison is not necessary.

The UPOV Guidelines provide that for a variety to be considered to be ‘clearly distinguishable’ its characteristics must be consistent and clear.¹⁹⁴ This can be done through observing the

¹⁸⁶ Article 7 of the UPOV Convention and Section (1) of the Part II of the Fourth Schedule of the Seeds and Varieties Act, note 175

¹⁸⁷ Article 1 of the 1991 UPOV Convention and Section 2 of the Seeds and Varieties Act

¹⁸⁸ KEPHIS Annual Report, *ibid*

¹⁸⁹ Section 21 (3) of the Industrial Property Act

¹⁹⁰ UPOV, “General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants’ 2002; Available at <http://www.upov.int/tgp/en/> accessed on 6th September, 2014 at 08.00 hours

¹⁹¹ UPOV Guidelines, *ibid*

¹⁹² UPOV Guidelines, *ibid*

¹⁹³ UPOV Guidelines, *ibid*

¹⁹⁴ UPOV Guidelines, *ibid*

growing trial in controlled growing conditions where necessary.¹⁹⁵ Each time the variety is cultivated in the same conditions, it should have consistent results in terms of the characteristics claimed to be distinct.

This test presupposes that the variety should be grown in controlled or similar conditions throughout. Food crops which are mainly planted by subsistence farmers unlike ornamentals which are commercial in nature and are grown in such conditions. The farmers repeatedly plant the varieties of plant they select from existing plants and thus developing new varieties.¹⁹⁶ Such varieties are developed mainly through the selection, production and diffusion.¹⁹⁷ These varieties have varied characteristics that may not necessarily be seen through examination by comparison of the plant once planted. The varieties have special attributes such as taste and nutrition which offers value-add to the community making them more attractive to the farmers to plant them.¹⁹⁸

The examination of distinctness of the variety as suggested by the UPOV Guidelines either by way of comparison or through observing the characteristic of the variety does not envision food crops especially those grown by the subsistence farmers and greatly favour ornamentals. The meaning of ‘clearly distinguishing’ as well as the meaning of distinguishing is limited to the physical characteristics of the variety.

3.3 Uniformity

This requirement is dependent on the distinctiveness test above. A variety is deemed uniform if its distinguishing characteristics are sufficiently uniform upon propagation.¹⁹⁹ There should be no variations of the distinguishing characteristics of the variety once it is planted under the same condition. The uniformity requirement is however subject to the different and expected variations that may occur during propagation such as negligible differences in the length of a stem.²⁰⁰

¹⁹⁵ UPOV Guidelines, *ibid*

¹⁹⁶ Dhar Biswajit, *Sui Generis System For Plant Variety Protection-Options under TRIPS*, Quno, April, 2002

¹⁹⁷ Wekundah, Joseph M. ‘Why Informal Seed Sector is Important in Food Security’ The African Technology Policy Studies Network (ATPS), 2012

¹⁹⁸ Wekundah, Joseph M, *ibid*

¹⁹⁹ Article 8 of the UPOV Convention and UPOV Guidelines, note 190

²⁰⁰ UPOV Guidelines, *ibid*

The relevant characteristics of the variety are those that the applicant claims to be distinct and are the ones subject to this test and therefore they must remain homogeneous throughout the examination and propagating processes. The relevant characteristics include, in the least, all the characteristics included in the variety description established at the date of the application.²⁰¹ Obvious characteristics of the variety may also be considered regardless of whether or not they appear in the description given by the applicant or not.²⁰²

Examination of uniformity under UPOV is not achievable by many new varieties of food crops developed by farmers.²⁰³ Most of these varieties are heterogeneous genetically and therefore they cannot conform to the test of homogeneity required under UPOV.²⁰⁴ The varied characteristics of these crops enable them to adapt to the various climatic and environmental conditions that they are grown.²⁰⁵ This standard set under the UPOV Convention is designed for commercialized farming and with developed countries in mind and such characteristics were not considered.²⁰⁶

3.4 Stability

Lastly, the variety must remain stable after repeated reproduction especially during the examination process if it is to be considered to have satisfied the registrability test. The relevant characteristics i.e. the characteristics the applicant claims to be distinctive must remain unchanged after repeated propagation or in the case of a particular cycle of propagation, at the end of that cycle.²⁰⁷ The variety must remain true to the initial description given by the breeder at the time of application throughout the period of reproduction. Any variation from the initial description denies the variety of stability and hence it is not registrable.

²⁰¹UPOV Guidelines, ibid

²⁰² UPOV Guidelines, ibid

²⁰³ Commission on Intellectual Property Rights, “*Integrating Intellectual Property Rights and Development Policy*”, London September 2002

²⁰⁴Commission on Intellectual Property Rights, ibid

²⁰⁵ Commission on Intellectual Property Rights, ibid

²⁰⁶ Commission on Intellectual Property Rights, ibid

²⁰⁷ Article 9 of the UPOV Convention

Varieties developed by farmers are less stable but more adaptable and suited to the agro-ecological environments that poor farmers live in.²⁰⁸ However, for a variety to qualify for protection, the characteristics claimed to be new and distinct must remain stable though out the period of reproduction.

The DUS examination is done harmoniously such that all the requirements above must be satisfied by every variety seeking to be protected.²⁰⁹ The test cannot be severed and therefore where a variety is new and distinct but lacks uniformity or is less stable as to satisfy the test of stability as is the case for the varieties developed by farmers, protection cannot be accorded to it. Some of these varieties serve a specific utility as they are adaptable in specific circumstances' which the farmers live in. The UPOV Guidelines require that a variety be clearly defined for it to be capable of protection.²¹⁰ The description given by the breeder or by the applicant assists in determining whether or not the characteristics of the variety meet the DUS criteria or not. These characteristics are the basis of examination of the variety and assist in determining whether or not the variety should be protected.

In conclusion, the intellectual property protection for plants in the form of plant variety protection is available only when the plant varieties and the breeder satisfy the condition set under the law.²¹¹ The State cannot bestow on a person any property rights to a variety which does not meet these conditions. Some varieties especially those developed by farmers often fall short of these standards hence they do not receive any proprietary rights over them.

3.5 PBR Applications in Kenya

As a member of UPOV Kenya adopts the legal framework set under the 1991 International Convention of Protection of Plant Varieties despite having ratified the 1978 convention only.²¹²

²⁰⁸ Commission on Intellectual Property Rights, note 203

²⁰⁹ UPOV Guidelines, note 190

²¹⁰UPOV Guidelines, ibid

²¹¹ Section 18 (1) of the Seeds and Plant Varieties Act

²¹² Mbote P. K, Intellectual Property Protection in Africa, 'An Assessment of Laws, Research and Policy Analysis on Intellectual Property Rights in Kenya'; International Environmental Law Research Centre, 2005; Available at <http://www.ielrc.org> last accessed on 20th July, 2014 at 21.16 hours

In some cases, it is not necessary to conduct these tests in Kenya because they have been conducted in a different country which is a UPOV member State. KEPHIS here relies on test reports from other UPOV Members States which KEPHIS cooperates with.²¹³ This arrangement is done under the provisions of the UPOV Convention which in recognition of the uniformity of the tests, the costs involved whilst conducting the tests allow members to share their results and rely on them when granting PBRs.²¹⁴ Although the UPOV Convention does not require its member States to have specific provisions on any plants, the Seeds and Plant Varieties Act provides for specific provisions on some plants it considers of more importance to Kenyans.²¹⁵ These provisions cover various aspects of applications for plant breeders including the naming of the plant varieties.²¹⁶

The table below analysis of the top ten applications filed at KEPHIS in the first ten years after the PVP office began operation in 1997 to 2008.²¹⁷

Crop	Total applications filed
Roses	460
Maize	132
Tea	39
Wheat	32
Alstroemeria	31
Limonium	24
Pyrethrum	23

²¹³ Sikinyi E, 'Plant Variety Protection (Plant Breeder's Rights in Kenya' in Ben Sihanya and Moni Wekesa (eds), *Intellectual Property Rights in Kenya* (Konrad Adenauer Stiftung & Others, 2009)

²¹⁴ UPOV, "General Introduction to the Examination of Distinctness, Uniformity and Stability and the Development of Harmonized Descriptions of New Varieties of Plants' 2002; Available at <http://www.upov.int/tgp/en/> accessed on 6th September, 2014 at 08.00 hours; also Article 31 of the UPOV Convention, 1991

²¹⁵ The Schedules to the Subsidiary Legislation in the Act

²¹⁶ Section 21 for instance provides for the selection of names for plant varieties which are subject of applications for plant breeders' rights. It also empowers the minister to make provisions for maintenance of a register of names so selected.

²¹⁷ As analysed in Sikinyi, E, 'Global Status and Impact of PVP' A Report presented at the Second World Seed Conference, November, 2011

French bean	20
Chrysanthemum	19
Calla lilies	15
Total	795

Source: Global Status and Impact of PVP’ A Report presented by Dr. Evans Sikinyi at the Second World Seed Conference, November, 2011

This position is replicated over the years with the number of ornamentals having more applications than those in the food crop sector.²¹⁸ Staple food production is mainly in the hands of subsistence farmers whose main source of seed is through previously saved seed from the previous season.²¹⁹ In the years 2012/2013 only eight applications for plant breeders’ covering food crops were filed.²²⁰ Whilst in 2011/2012 applications for food crops were only 27 compared with the 30 applications filed for ornamentals.²²¹ Below is a table analysing the applications filed at the registry in the years 2012, 2013 and to 25th November, 2014;

Plant variety	2012	2013	2014²²²
Roses	52	67	8
Maize	-	-	-
Tea	6	7	-
Statice	2	1	-
Dry beans	3	-	-
French Beans	4	4	-

²¹⁸ International Union for the Protection of New Varieties of Plants ‘UPOV Report on the Impact of Plant Variety Protection’, UPOV, 2005

²¹⁹ UPOV Report, *ibid*. Staple food is taken to be maize, cassava rice, sweet potato and wheat.

²²⁰ KEPHIS ‘Annual Report and Financial Statement, 2013’ available at http://www.kephis.org/index.php/downloads-documents/cat_view/11-annual-reports/15-2013 accessed on 20th July, 2014 at 19.00 hours

²²¹ KEPHIS ‘Annual Report and Financial Statement, 2013’, *ibid*

²²² This data is obtained from the WIPO PLUTO Plant Variety Data Base at <https://www3.wipo.int/pluto/user/en/index.jsp> as accessed on 25th November, 2014 at 11.12 am

Pea	1	1	-
Phlox	2	-	-
Gypsophila	-	1	-
Potato	1	4	-
Irish Potato	-	3	10
Hypericum	-	1	-
Grass	-	1	-
Pineapple	-	1	-
Pin Cushion Flower	-	1	-
Raspberry	-	-	4
Total	71	92	22

3.6 Conclusion

The tests discussed above are best suited for commercially bred varieties²²³. From the KEPHIS Reports on the status of PBRs in Kenya, this has continued to be the position.²²⁴ However plant breeding in Kenya also happens at the stage of the subsistence farmers. The plant breeding at this instance is often characterised by the activities such as planting seeds of their useful crops, selecting from their harvest those seeds that present the best traits, inter-crossing those seeds with other seeds with other interesting traits but acquired from other farmers or bought in local markets and re-selecting from the harvest products bearing the traits that they are seeking.²²⁵ The varieties developed from this process are usually less stable, distinct and homogeneous in

²²³ This is especially so in the ornamentals sector. On activity of breeding in Kenya, please see the KEPHIS- Annual Report and Financial Statement for various years.

²²⁴ KEPHIS- Annual Reports and Financial Statements- available at http://www.kephis.org/index.php/downloads-documents/cat_view/11-annual-reports accessed on 20th July, 2014 at 19.00 hours

²²⁵ QUNO Briefing paper Number 2 Food, Biological Diversity and Intellectual Property ‘Definition of “Breeder” under UPOV’ (2013) available at <http://www.quno.org/sites/default/files/resources/Briefing%20Paper%20Definition%20of%20Breeder.pdf> as accessed on 24th September, 2014 at 11.00 hours

nature²²⁶. These varieties are also specifically developed to suit the specific ecological environments that these farmers live in.

These processes nonetheless results in development of new plant varieties. Despite this, the Kenyan intellectual property legal framework does not seem to either recognize or protect these varieties through plant breeders' rights. The conditions set under the Kenyan law are applied uniformly and there is no distinction between the varieties being protected from each other or between the applicants. The application of these conditions determines whether or not a variety will be recognized and protected. They are however is exclusive to the extent that they do not envision varieties that are anything other than new, distinct, uniform and stable.

The next chapter explores how the standards set under the UPOV Convention have been applied in other countries to recognize all varieties developed by all breeders and especially by subsistence farmers alongside the protection to ornamentals and food crop varieties.

²²⁶ Commission on Intellectual Property Rights, *"Integrating Intellectual Property Rights and Development Policy"*, London September 2002

CHAPTER FOUR

4.1 Introduction

The Trade Related Aspects of Intellectual Property (TRIPS) Agreement represents is the most harmonized system of intellectual property protection. All World Trade Organisation (WTO) Member States must provide the minimum protection to intellectual property as provided for under the TRIPS agreement. The TRIPS Agreement requires Member States to provide protection for plant varieties either by patents or by an effective *sui generis* system or by any combination thereof.²²⁷ Most developing countries have had to amend their existing Intellectual property laws to adopt more harmonised system of IP with a wider scope of protection and stronger rights for the IP owners than those previously existed.²²⁸ These amendments have enabled these countries to comply the requirements set under the TRIPS agreement.

Amongst these developing countries are India and Malaysia which have passed laws protecting plant varieties and can be said to be TRIPS compliant. These respective laws are a form of effective *sui generis* protection which protects both the farmer as a breeder as well as a commercial breeder. Below is an examination of the laws and the standards set under these laws for registration of plant breeders' rights. There is also an analysis of the application status of the plant breeders' rights in these countries which is limited to the status of the applications in food crops and ornamentals subsectors.

4.2 The Indian Plant Variety Protection Legislation

India is not a member of the UPOV but it is a member of the World Trade Organisation and a signatory to the TRIPS Agreement.²²⁹ However, in fulfilment of its obligations under Article 27.3 (b) India opted to enact the Protection of Plant Varieties and Farmers Rights (PPVFR) Act which is a *sui generis* system for protection of new plant varieties.²³⁰ This PPVFR Act became

²²⁷ Article 27.3 of the TRIPS Agreement

²²⁸ Dhar Biswajit, *Sui Generis System For Plant Variety Protection-Options under TRIPS*, Quuno, April, 2002

²²⁹ List available at http://www.wto.org/english/thewto_e/whatis_e/tif_e/org6_e.htm accessed on 28th September, 2014 at 18.00 hours

²³⁰ More information available at <http://www.wipo.int/wipolex/en/details.jsp?id=2401> accessed on 28th September, 2014 at 18.00 hours

fully operational in 2007.²³¹ The PPVFR Act provides for the establishment of an effective system for protection of plant varieties, the rights of farmers and plant breeders and to encourage the development of new varieties of plants.²³² It also lays down the mechanism and procedure for the registration of new plant varieties for purposes of exploitation and protection by the law.²³³ It creates a range of varieties that can be recognized and protected. The three classes of plant varieties are new, extant and farmers' varieties.²³⁴ The PPVFR Act also recognizes and provides for the registration of essentially derived varieties.²³⁵

The different classification of recognizable and protectable varieties requires differentiated definition and the PPVFR Act proceeds to define the varieties in specific manner. Farmers varieties are those varieties that have been traditionally cultivated and evolved by the farmers in their fields or that are wild relative or land races of a varieties about which the farmers possess the common knowledge while extant varieties on the other hand are those varieties that are available in India and which are notified under section 5 of the Seeds Act, 1966, farmers' variety, a variety about which there is common knowledge or any other variety which is in public domain.²³⁶ These varieties are contradistinguished with new varieties which are defined as being other varieties other than extant or farmers' varieties.²³⁷

The PPVFR Act requires the varieties that qualify for protection to conform to the criteria of novelty, distinct, uniform and stable which standards are similar to those set under the UPOV Convention.²³⁸ However for extant varieties are exempt from criteria of novelty.²³⁹ In addition to the provisions of the PPVFR Act, the regulations made pursuant to the provisions of the PPVFR Act, ensure the varieties are not to be examined in a similar manner. In particular, the regulations

²³¹ Ibid

²³² Preamble of the Protection of Plant Varieties and Farmers Rights Act, India

²³³ PPVFR Act, ibid

²³⁴ Section 14 of the PPVFR Act

²³⁵ Section 23 of the Act and section 2 defines an essentially derived variety is a predominantly derived from an initial variety and at the same time clearly distinguishable from the initial variety

²³⁶ Section 2 of the PPVFR Act

²³⁷ Section 29 of the PPVFR Act

²³⁸ Section 15 of the PPVFR Act

²³⁹ Section 15 (2) of the PPVFR Act

require that the farmers' varieties or other similar varieties to be evaluated in the paired row test.²⁴⁰ In order to reduce the standard set for uniformity and stability, regulation 7 provides that if a variety meets the uniformity criteria, such variety shall be deemed to have met the stability criteria.²⁴¹

The differentiation in the conditions for protection, definitions, classification and the tests conducted on the varieties does not affect the right granted at the end. The nature of the protection and the rights granted under this law is the same. The issuance of a certificate of registration issue under the PPVFR Act confers an exclusive right on the breeder to produce, sell, market, distribute, import or export the variety.²⁴² The period of protection for the varieties is fifteen years from the date of registration of the variety.²⁴³ This form of legislation ensures that all varieties enjoy the same form of protection and also recognizes all the varieties.

Extant varieties currently constitute the majority of the varieties registered since the PPVFR Act became functional. The applications for protection of plant varieties for food crops are significantly higher than ornamentals.²⁴⁴ As at September, 2014, the number of applications filed for ornamentals in particular roses were six out of the over seven thousand applications filed.²⁴⁵

The table below summarises the top ten applications for PBRs filed at the Plant Authority's registry.²⁴⁶

No.	Crop	Number of applications
1.	Rice	3698*

²⁴⁰ Regulation 5 (3) of the Protection of Plant varieties and Farmers Rights (Criteria for Distinctness, Uniformity and Stability for Registration) Regulations, 2009

²⁴¹ Regulation 5 (7)

²⁴² Section 28 of the Act; the exceptions to this right are the same and include researcher's and farmers rights.

²⁴³ Section 24 (6) of the Act

²⁴⁴ This information is available at

<http://www.plantauthority.gov.in/pdf/Status%20Crop%20wise%20Application.pdf> and

http://www.plantauthority.gov.in/List_of_Certificates.htm last accessed on 9th October, 2014 at 21.00 hours

²⁴⁵ Status of the applications-Crop Wise, *ibid*

²⁴⁶ This data is available from the Indian Plant Authority official website <http://www.plantauthority.gov.in/> last accessed on 9th October, 2014 at 21.30 hours

2.	Tetraploid cotton	1019
3.	Maize	474
4.	Brijal	287
5.	Pearl Millet	247
6.	Tomato	244
7.	Sorghum	223
8.	Wheat	177
9.	Pigeon pea	123
10.	Okra	121

*Out of the total number of applications for rice filed at the registry were filed by farmers as the breeders.

In addition to the above, the fee for the registration of varieties with the Plant Variety Authority is also varied and is dependent on the nature of the variety being protected. The applicants are also divided into three categories- individual, educational and commercial depending on the purpose of the variety. In addition, the fee applicable is payable in Indian Rupee which is the local currency as opposed to US Dollars or its equivalent as is the case for Kenya. The table below indicates the applicable fees for the year 2014.²⁴⁷

No.	Type of Variety	Fee applicable (Indian rupee)
1	Extant variety notified under section 5 of the Seeds Act, 1966	1,000
2.	New or essentially derived variety	Individual -5,000 Educational-7,000 Commercial -10,000
3.	Extant variety about which there is common knowledge	Individual -2,000 Educational-3,000 Commercial-5,000

²⁴⁷ See the Protection of Plant Varieties and Farmers Rights' Authority, Brochure PPVFRA/4, December 2011 issue available at http://www.plantauthority.gov.in/pdf/G_Brochure_English.pdf last accessed on 9th October, 2014

In conclusion, the Protection of Plant Varieties and Farmers Rights Act is an attempt by the Indian government to recognize the contribution of both commercial plant breeders as well as the farmers in plant breeding activities.²⁴⁸ The application procedure is cascaded in such a manner as to ensure that the commercial breeders are not treated the same as individual breeders. This law has enabled all breeders' farmers, individuals and commercial breeders to register and protect their varieties with the plant authority. The differentiation in the definition, the conditions for registration and the application fees has enabled all the breeders in this country to have their varieties recognized and protected by the law.

4.3 The Malaysian Plant Variety Protection Legislation

Malaysia is also not a member of the UPOV but has passed the New Plant Varieties Act 2004 (NPVA) to govern the protection of new plant varieties protection and became operational in 2008.²⁴⁹ This is in attempt to comply with the requirement under Article 27.3 of the TRIPS Agreement. Its main objective is to provide for the protection of the rights of breeders of new varieties and recognize and protect the contribution made by farmer, local communities and indigenous people towards the creation of new varieties.²⁵⁰

All plant varieties can be protected under the NPVA except for microorganisms.²⁵¹ A breeder is defined to include a farmer, or group of farmers, local community or indigenous people who have carried out the functions of a breeder.²⁵² The conditions set under the Act for the registration of new plant varieties are similar to those set under the UPOV Convention, 1991 Act.²⁵³ A plant variety shall be registered as a new plant variety only if it is new, distinct, uniform and stable.²⁵⁴

²⁴⁸ Dhar Biswajit, note 227 above

²⁴⁹ Available at <http://www.pvpbkt.doa.gov.my> last accessed on 11th October, 2014 at 12.00 hours

²⁵⁰ Preamble to the New Plant Varieties Act 2004, Malaysia

²⁵¹ Section 2 of the NPVA Act

²⁵² Section 13 of the NPVA Act

²⁵³ Section 14 of the NPVA Act

²⁵⁴ Section 14 (1) of the NPVA Act

There is no requirement for stability and uniformity for varieties bred by farmers and local communities. Where the plant variety is bred by a farmer, local community or indigenous people, the variety is registrable as a new variety and the breeder granted breeder's rights if the variety is new, distinct, and identifiable.²⁵⁵ A variety is identifiable if it can be distinguished from any other plant grouping by the expression of one characteristic and that characteristic is identifiable within individual plant (s) and such characteristics can be identified by any person skilled in the relevant art.²⁵⁶ This law has therefore based the examination of new varieties on novelty (new), stability, identifiable, distinctness and uniformity. The varieties from commercial breeders are subjected to a higher or a stringiest test while those of farmers the standards are lowered by eliminating the requirement for uniformity and stability.

Once recognized as new varieties under the NPVA, the varieties recognized and protected in equal measure.²⁵⁷ The breeder obtains the same bundle of rights against third parties including the government. The scope of the breeders' rights extend to excluding the production, conditioning for purpose of propagation, offering for sale, marketing, exporting, importing and stocking of the material any of these acts for commercial purposes.²⁵⁸ The breeders' rights however do not extend to any of these acts when they are done for non commercial purposes and for experimental purposes.²⁵⁹ These rights are territorial and they can only be enjoyed and enforced in Malaysia.

Since the office of Plant Varieties Board in Malaysia was established in 2008, it has received one hundred and eighty (180) applications. Out of these applications fifty five (55) are for food crops²⁶⁰ and ninety five (95)²⁶¹ are for ornamentals. The table below summarizes the applications filed with the Board.²⁶²

²⁵⁵ Section 14 (2) of the NPVA Act

²⁵⁶ Section 14 (3) (e) of the NPVA Act

²⁵⁷ Pursuant to section 14 the protection is for 15 to 25 years.

²⁵⁸ Section 30 of the Act defines the scope of the breeder's rights

²⁵⁹ Section 31 of the Act lays down the limitations to the breeder's rights

²⁶⁰ This list is inclusive of fruits, cereals, mushrooms, herbs and vegetables. List available at <http://www.pvpbkktdoa.gov.my> last accessed on 9th October, 2014

No.	Crop	Number of Applications
1.	Fruits	18
2.	Ornamentals	95
3.	Industrial Crops	10
4.	Forest Plants	20
5.	Cereals	20
6.	Vegetables	11
7.	Herbs	3
8.	Mushroom	3
	Total applications	180

Despite the ornamentals being more than half of the applications filed at with the Board, the food crops are of a significant number. It is also notable that amongst the applications for ornamentals filed are also local and farmer bred.²⁶³ As a mechanism of protection of new plant varieties, the Malaysian Plant Variety Law has managed to allocate private rights to all plant breeders and in a manner that enables applicants from all classes to seek for protection. This law places an equal obligation on the State to protect the plant breeders' rights once granted.²⁶⁴

In conclusion the Malaysian Plant Variety Law has adopted the UPOV standards of novelty, distinctness, uniformity and stability for new and modern varieties.²⁶⁵ There is however a different standard applicable for locally or farmer bred varieties and the tests of uniformity and stability are replaced by the test of identifiable.²⁶⁶ This approach has made it possible to

²⁶¹ According to the National Crops List published by the Authority and available at <http://www.pvpbkkt.doa.gov.my> last accessed on 9th October, 2014, ornamentals are dendrobium, liliun, chrysanthemum and mokara.

²⁶² Information available at www.pvpbkkt.doa.gov.my last accessed on 9th October, 2014

²⁶³ The Board's website, *ibid*

²⁶⁴ Sections 47, 48 and 49 of the Act

²⁶⁵ Section 14 (1) of the Act

²⁶⁶ Section 14 (2) of the Act

recognize and protect plant varieties that are more heterogeneous and variable such as landraces and farmer varieties.²⁶⁷

4.4 Conclusion

The UPOV Convention offers a ready-made legal framework to adopt and upon joining its membership the Secretariat assists new Member States to draft their national PVP Legislation in line with the Convention. The Conventions are extremely detailed and the Secretariat offers test guidelines and technical support to enable member States to implement their provisions.²⁶⁸ Although the tests of Novelty, distinctness, uniformity and stability under the conventions allow plant varieties to be competitive at the international arena,²⁶⁹ these tests are often too high for food crops developed and grown locally especially by the developing countries.

There is need to recognize and protect new plant varieties and plant breeders to encourage innovation and more research in agriculture. Innovation and research in new plant varieties creates plant varieties that form the cradle of continuous yield increase of crops.²⁷⁰ However the recognition should be based on attainable criteria and conditions set by the law. The approach of subjecting the different plant varieties to different tests as adopted by India and Malaysia ensures that the protection is all encompassing. These approaches make it possible to have protection of plant varieties or groupings that are more heterogeneous and unstable characteristics.²⁷¹

The nature of subsistence farming is such that it is guided by the immediate need to sustain them and their families. In their farming activities, they breed and develop new varieties that are

²⁶⁷ De Jonge, B 'Plant Variety Protection in Sub Saharan Africa: Balancing Commercial and Small Holder Farmers' Interests' Canadian Centre of Science and Education, Journal of Politics and Law; Vol. 7, No. 3 2014

²⁶⁸ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

²⁶⁹ KEPHIS- Annual Reports and Financial Statements- available at http://www.kephis.org/index.php/downloads-documents/cat_view/11-annual-reports and KEPHIS Newsletters available at http://www.kephis.org/index.php/downloads-documents/cat_view/11-newsletter accessed on 20th July, 2014

²⁷⁰ Louwaars, Niels., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

²⁷¹ De Jonge, B note 266

heterogeneous and less stable which characteristics make them more adaptable to their specific environments that the farmers live in.²⁷² These characteristics are relevant as the varieties fit local agro-ecological conditions and respond to changing conditions in the face of climatic change.²⁷³ The adoption of different and lower tests of examination for protection of plant varieties by India and Malaysia has allowed for protection of many food crop varieties developed both by commercial breeders and subsistence farmers.

²⁷² Commission on Intellectual Property Rights, “*Integrating Intellectual Property Rights and Development Policy*”, London September 2002

²⁷³ De Jonge, B note 266

CHAPTER FIVE

5.0 Conclusion and Recommendations

5.1 Conclusion

Kenya is an agricultural led nation and the sector is a major source of food, income, employment and a foreign exchange earner.²⁷⁴ Agricultural production can be done for commercial purposes, for subsistence or as a hobby. The commercial farmer is ordinarily interested in profit maximization while the subsistence farmer is concerned with producing food for the family.²⁷⁵ Accordingly, the farming practices engaged by the two farmers are mainly guided by their ultimate objectives and the subsistence farmer main crop is food crop. Kenya's subsistence farming is done by small holder farmers who are however not strictly subsistence as they have adopted semi commercial or semi subsistence farming by producing industrial crops to subsidize their production.²⁷⁶

These small holder farmers are highly innovative especially with the plant varieties they propagate. They conduct some form of selection on their farms based on the available varieties.²⁷⁷ These varieties are selected for a range or traits that are not genetically uniform which helps ensure that the some crops will grow even in the face of unexpected, difficult or varying conditions.²⁷⁸ These varieties are therefore more heterogeneous and less stable.²⁷⁹ The farmer innovation process begins with the identification of a variety with desirable qualities and

²⁷⁴ Kenya Facts and figures 2012, Kenya National Bureau of Statistics, 2012

²⁷⁵ Nyikai, R. A “*Commercial and subsistence Farming: What is the future for smallholder Kenyan Agriculture*” African Crop Science Conference Proceedings, Vol. 6. 591-596, African Crop Science Society (2003)

²⁷⁶ Nyikai, ibid

²⁷⁷ Samuel M Maina, the Registrar Plant Breeders Rights Office as at 25th November, 2014 in a response to question posed by the researcher. See the Key Informant Guide Appendix A herein

²⁷⁸ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

²⁷⁹ Commission on Intellectual Property Rights, “*Integrating Intellectual Property Rights and Development Policy*”, London September 2002

then informally experimenting with the identified variety on the farm.²⁸⁰ These varieties are maintained though various agro-ecological conditions and times and adapted over time.²⁸¹ Notably, the choice of these varieties is guided mainly by the farmer's objective of food production and therefore these characteristics make the variety more adaptable and suited to the specific environments that the farmers live in.²⁸²

The nature of plant breeding is that it begins with identification and selection of a variety with desired traits which then becomes the variation then this is followed by crossing that variety with another to create a new variety.²⁸³ This process can be undertaken by professional and non professional plant breeders. The subsistence farmers in the small holdings fall under the class of non professional plant breeders. Although guided by different objectives, the farmers' purposive selection and crossing amount to development of new plant varieties which are however not uniform or stable but have significant qualities that enable them to adapt to the different farmer's environments. Professional plant breeding in Kenya is purposive but also guided by the need to commercialise the variety. The Distinctiveness Uniformity and Stability criterion required by the provisions of the Seeds and Plant Varieties Act (the Act) is also a guiding factor as protection of the variety enables the breeder to commercialise it.

Primarily, the Seeds and Plant Varieties Act protects those varieties that are new, distinct, uniform and stable.²⁸⁴ These conditions must be satisfied by every variety before a grant of Plant Breeders' Rights is issued.²⁸⁵ These conditions are however unattainable by food crop varieties

²⁸⁰ Dhar B, "*Sui Generis Systems for Plant Variety Protection: Options under TRIPS*" Discussion Paper Quno (2002)

²⁸¹ Peter Munyi, a PhD researcher at the Law & Governance Group of Wageningen University- Intellectual Property Rights, Integrated Seed Sector Development and smallholder farmers in a response to question posed by the researcher. See the Key Informant Guide Appendix A herein

²⁸² Commission on Intellectual Property Report, *ibid*

²⁸³ Louwaars. N., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

²⁸⁴ Section 18 of the Act and Part II of the Fourth Schedule to the Act

²⁸⁵ Section 18, *ibid*. According to the PBR Registrar, these are defined standards and all varieties to be protected must conform. The sufficiency of the variety is dependent on a variety or species. However this does not mean

developed by farmers which are primarily heterogeneous and unstable. The proprietary rights and the benefits derived from protection and extended²⁸⁶ to the protected varieties under this law are therefore unavailable to these food crop varieties based on the criteria for protection.

Kenya is a signatory to the 1978 UPOV Convention but the criterion for protection of new plant varieties under the Seeds and Plant Varieties Act is based on the 1991 Convention.²⁸⁷ One of the advantages of being a member of UPOV is the cooperation a State receives from other Member States in regard to testing of new varieties. Each Member State acts as a liaison office for UPOV and an examination report issued by a liaison office can be relied upon in granting PBR in another country without necessarily subjecting the variety to another examination process.²⁸⁸ The uniformity and the nature of application of the DUS test across all the UPOV Member States proceeds on the assumption that all varieties to be protected are the same. This is the first and the basic presumption that the Seeds and Plants Varieties Act adopted from the UPOV Convention and it is the principle that has been applied since the PBR office in Kenya became operational.²⁸⁹ Plant breeding however does not assume the linear development curve or results as presupposed by the DUS test by the UPOV Convention. To the contrary food crop plant breeding by farmers

that a differentiated test for different varieties is applied. All varieties are subjected to the DUS test and when they fail to meet the standards of the test, they are denied protection. See Appendix A -the Key Informant Guide

²⁸⁶ These benefits include the commercialization of the varieties as new varieties. Commercial sale of seeds is dependent on protected varieties and under section 8, the law restricts such sale of seeds by requiring prior testing which is still dependent on protection of the variety.

²⁸⁷ Mbote P. K, Intellectual Property Protection in Africa, 'An Assessment of Laws, Research and Policy Analysis on Intellectual Property Rights in Kenya'; International Environmental Law Research Centre, 2005; Available at <http://www.ielrc.org> last accessed on 20th July, 2014 at 21.16 hours

²⁸⁸ KEPHIS acts as the UPOV Kenya Liaison Office, KEPHIS , 'Annual Report and Financial Statements June, 2012', 2013; Available at <http://www.kephis.org> accessed on 20th July, 2014 and Mbote P.K, Intellectual Property Protection in Africa, 'An Assessment of Laws, Research and Policy Analysis on Intellectual Property Rights in Kenya', *ibid*

²⁸⁹ The PBR Office was established in 1997 and the first grant of PBR was issued in 2003. See Rangnekar. D, "Assessing the Economic implications of different models for implementing the requirement to protect plant varieties: A case study of Kenya" Centre for the Study of Globalization and Regionalization The University of Warwick, 2006

creates new plant varieties with distinct characteristic (s) but the varieties themselves are heterogeneous in nature and less stable.

The UPOV Convention was designed by and for the European commercial breeding interests and balanced these interests with those of the European farmers.²⁹⁰ After the application of the DUS test in Kenya, KEPHIS has repeatedly reported a higher number of applications for ornamentals especially from European countries as compared to those of food crops.²⁹¹ The DUS test is therefore more applicable to commercially bred varieties especially ornamentals. Despite its benefits the DUS test under the Seeds and Plant Varieties Act is not an appropriate test to apply when determining the registrability and protection for food crop plant varieties.

There are various issues that cause the variance in the number of PBR applications between ornamental crops and food crops. Ornamental Crops are vegetatively propagated and are of higher monetary value due to the availability of the market.²⁹² For farmers in subsistence farming, the issues of market may not be of much concern. Protection in this case may therefore not be necessary.²⁹³ However, where the varieties they breed need to be commercialised, the question of availability of market becomes a factor to consider while doing any breeding. Protection forms the basis of confirming the varietal attributes during seed certification a precondition before commercialisation of seeds in Kenya.²⁹⁴

²⁹⁰ Dutfield G, *Food, Biological Diversity and Intellectual Property: The Role of The International Union for the Protection of New Varieties of Plants (UPOV)* Quno, February 2011

²⁹¹ KEPHIS , ‘Annual Report and Financial Statements June, 2012 and 2013

²⁹² Samuel M Maina, the Registrar Plant Breeders Rights Office as at 25th November, 2014 in a response to question posed by the researcher. See the Key Informant Guide Appendix A herein

²⁹³ Peter Munyi, a PhD researcher at the Law & Governance Group of Wageningen University- Intellectual Property Rights, Integrated Seed Sector Development and smallholder farmers in a response to question posed by the researcher. See the Key Informant Guide Appendix A herein

²⁹⁴ Note 292 above

5.2 Recommendations

Plant breeding is the basis for propagation material in agriculture and horticulture and it creates the plant varieties that form the cradle of a continuous yield increase of crops thus making an important contribution to food security.²⁹⁵ It is the development of new varieties with new properties.²⁹⁶ The role of intellectual property in plant breeding is to protect new varieties and the new properties in them. In plant breeding, the traits of the properties in a variety determine whether or not intellectual property protection will be afforded to a variety. The Seeds and Plant Varieties Act require the new varieties to be distinct, uniform and stable. However and as discussed above, this test is not practical for food crop varieties developed by farmers which are new, distinct, heterogeneous and less stable. The test is too high and unrealistic in the case of such varieties.

As a developing country with interest in attaining food security and sustainability²⁹⁷, Kenya should invest in food crop plant breeding one of the ways of achieving its goals. One way of doing such is by acknowledging uniqueness of food crop plant breeding especially by the farmers and the varieties developed from that process. In addition, the intellectual property protection should be one of the ways applied by law to protect the essential properties of the varieties so created. In order to afford varieties with such properties, there need to be a test that is reflective of the nature of the food crop varieties especially the ones developed by farmers. In particular the test should be reflective of the essential properties of these varieties. This includes the varied or diverse traits of these varieties which enable them adapt to the specific ecological environments that the varieties are planted in.

The proposed criteria for protection of food crop varieties should be based on the unique circumstances and should be for those crops that the farmers rely on for sustainability. The

²⁹⁵ Louwaars. N., *et al Breeding Business: The future of plant breeding in the light of developments in patent rights and plant breeder's rights* Centre for Genetic Resources, the Netherlands, (Wageningen University and Research Centre), 2009

²⁹⁶ Louwaars, *ibid*

²⁹⁷ Sessional Paper of 2012 on Vision 2030, Office of the Prime Minister Office of the Prime Minister Ministry of state for Planning, National Development and Vision 2030. Available at http://www.vision2030.go.ke/cms/vds/VISION_2030_Sessional_Paper_final_09_11_12.pdf

proposed criterion should replace uniformity and stability tests with utility of the variety and as such accommodate the diversity and less stable food crop varieties. These characteristics should be identifiable by people knowledgeable in the art. The proposed conditions for registration of new food crop varieties can therefore be summarised as new, distinct, utility and identifiable.

In defining the components of the criterion, the law should be guided by the need to encourage and recognize the food crop plant breeders who are mostly subsistence or semi commercial farmers. The novelty (new) test is and should be based on the release of the variety to the market for commercialisation purposes. Distinctiveness of the variety under the Act is to the effect that a variety can only be considered distinct if it is distinguishable from any other variety whose existence is a matter of common knowledge.²⁹⁸ However food crop varieties developed by farmers are derived from varieties whose existence is a matter of common knowledge, at least to the farmers. The characteristics of the new variety are therefore not distinguishable from common knowledge. The definition distinctiveness test should therefore be based on the specific characteristics of the varieties. Accordingly, a variety should be considered distinct if one or more of its characteristics are distinguishable from existing varieties whether the existing varieties are protected or not.

The requirement for utility in the criterion for protection is the requirement for the new characteristics of the new plant varieties to serve a specific purpose once propagated through planting. These characteristics include social benefits such as nutritional value and ability to survive harsh weather conditions which are beneficial to the society and the country as a whole. In determining whether or not to protect a variety that is new, distinct and that has utility, the examining body has to identify these qualities in a variety. To assist such body in so doing therefore the variety's traits that are considered as new, distinct and which has utility, should be identifiable by a person skilled in the art. In this case, the person skilled in the art is the plant breeders' rights examiners working with KEPHIS as the body in charge of administering plant breeders' rights in Kenya.

The above described test should be administered to food crop varieties only while the current DUS test should continue being applied to other sectors especially the ornamentals. The majority

²⁹⁸ Part II of the Fourth Schedule to the Seeds and Plant Varieties Act, Chapter 326 of the Laws of Kenya

of the new ornamental varieties are meant for export and the DUS test is most applicable as there is need to sustain uniform international standards. This is not the case for the food crops whose main market is the local consumption. The proposed test therefore should be for the food crops only and is an alternative test for food crops.

To introduce the above criterion as the test for food crops, the Seeds and Plant Varieties Act as the law regulating grants of Plant Breeders' Rights in Kenya has to be reviewed and amended and KEPHIS's mandate extended to cover these varieties. A determination has to be made as to whether or not to maintain a record of the food crops varieties in the same register as ornamentals or to have a separate register for them. Lastly, a specific definition and description of what should be considered food crop for registration should be defined in specific terms and in reference to the plant breeders involved in the process.

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Key Informant Guide

Response by Peter Munyi, a PhD researcher at the Law & Governance Group of Wageningen University- Intellectual Property Rights, Integrated Seed Sector Development and smallholder farmers

Response by Samuel M Maina, the Registrar Plant Breeders Rights Office as at 25th November, 2014

Response by Dr. Evans Sikinyi, a Plant Breeder and the current Chief Executive Officer, Seed Trade Association of Kenya, STAK

Appendix A
Key Informant Guide

Plant Breeders' Rights in Kenya: Examining the effect of the DUS Test in Food Crops and Ornamentals

Part A: Introduction

My name is Caroline Wanjiru Muchiri. I am an LLM Candidate at University of Nairobi, School of Law. As part of the requirements for the fulfilment of the award of the degree, I am carrying out a research under the topic **Plant Breeders' Rights in Kenya: Examining the effect of the DUS Test in Food Crops and Ornamentals**. The research intends to establish how the Distinctiveness, Uniformity and Stability test under the Seeds and Plant Variety Act has affected the number of applications and grants of plant breeders' rights for food crops in Kenya. Primarily, the research is seeking to establish the appropriateness of the DUS test for food crops in Kenya.

The interview will take approximately thirty minutes and is a voluntary process. You may withdraw your consent from participating in this at any time during the interview. The information obtained from this interview will be used for academic purposes only. Kindly answer the questions posed as accurately as possible. I value your opinion on the subject matter and where the same is provided in during this interview, it will be protected and respected as such.

Would you wish to participate in the interview?

Part B: Details of the Interviewee

Name: Simon M. Maina

Occupation: Registrar, Plant Breeders Right Office at KEPHIS.

Date of Interview: 21st November, 2014

Part C: The Interview

1. What is the role of plant breeding in agriculture in Kenya?

- By providing an incentive to breeders, Plant Breeders' Rights encourage investment and effort into plant breeding in Kenya. Breeders – local and international – are motivated to develop superior varieties resulting in increased productivity
- The rights scheme also allows Kenyans access to internationally bred varieties which would not be available to them without legal protection e.g. ornamentals such as roses.
- The result is that farmers gain access to an increased number and range of improved varieties.

2. In your opinion, do farmers especially the subsistence farmers in Kenya; undertake any form of plant breeding? If yes, how can you describe their plant breeding?

Yes. They do some form of selection of outstanding plants in their farms. One small scale flower farmer has protected a summer flower variety developed through selection. We have a recent application developed through the same method.

3. What is the significance of protecting new plant varieties in Kenya?

We have an increase in the number of local varieties released and available to the farming community. Increased returns from horticulture due to availability of elite foreign varieties that farmers could not access if there was no PBR.

4. Would a high number of applications and grants of PBRs be an indicator of the level of breeding in a subsector?

If no, what would be such an indicator?

Yes. If you check data from different countries, you would see this correlation

5. What is the main purpose of the Distinctiveness, Uniformity and Stability test for plant varieties under the Seeds and Plant Varieties Act?

1. Examination of varieties for grant of Plant Breeders' Rights.
2. To establish if new varieties of agricultural crops are suitable for release for commercialization in Kenya (National listing).
3. Development of variety descriptors to be used for confirming varietal attributes during seed certification

6. Are all new food crop plant varieties uniform and stable? If no, what other salient characteristics do they have?

They should be sufficiently uniform and stable based on defined characteristics. The sufficiency of the stability/uniformity is based on the type of variety and/or species. There are defined standards. Any variety that fails to meet the threshold for stability/uniformity is rejected/denied PBR.

7. The number of food crop plant varieties applications and grants as reported annually by KEPHIS lower than that of ornamentals. Would a review of the law, especially in regard to the standards of protection under the Seeds and Plant Varieties Act, help in increasing the applications and grants for plant breeders' rights in the food crop subsector?

A review may not necessarily change the situation. Ornamentals are mostly vegetatively propagated and much easier to propagate intact. Their products are also of higher monetary value compared to food crops. Food crops are under compulsory certification

and so it is not easy for one to infringe as they will be detected by KEPHIS inspectors during seed certification process.

8. Would you recommend introduction of differentiated standards of protection for ornamentals and food crops in Kenya? What would be the challenges of enacting and implementing such a standard?

Requirements for protection are harmonized internationally and Kenya cannot set its own standards. There is room for farmer exceptions in the UPOV Act that can be applied to agricultural crops, but conditions for protection remain the same.

9. Is intellectual property an adequate protection mechanism to protect new plant varieties? If no, what other mechanisms can be used to offer protection to new plant varieties in Kenya?

It is largely sufficient.

10. Any comments or recommendations on the subject matter

Please share with us a copy of your thesis.

Thank you for participating in this interview, for your time and your answers.

Appendix A
Key Informant Guide

Plant Breeders' Rights in Kenya: Examining the effect of the DUS Test in Food Crops and Ornamentals

Part A: Introduction

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The interview will take approximately thirty minutes and is a voluntary process. You may withdraw your consent from participating at any time during the interview. The information obtained from this interview will be used for academic purposes only. Kindly answer the questions posed as accurately as possible. I value your opinion on the subject matter and where the same is provided in during this interview, it will be protected and respected as such.

Would you wish to participate in the interview?

Part B: Details of the Interviewee

Name: Peter Munyi

Occupation: An Advocate of the High Court of Kenya and PhD researcher at the Law & Governance Group of Wageningen University- Intellectual Property Rights, Integrated Seed Sector Development and smallholder farmers.

Date of Interview: 25.11.2014

Part C: The Interview

1. What is the role of plant breeding in agriculture in Kenya?

Plant breeding plays varying roles for different crops. However, in general terms breeding being a crop improvement activity, then it is an important undertaking. Today with all the food security problems being faced in the countries it is even more important.

2. In your opinion, do farmers especially the subsistence farmers in Kenya;undertake any form of plant breeding? If yes, how can you describe their plant breeding?

Plant breeding is both an art and science. However, the law seems to only view plant breeding from a scientific/technical lense. Yet, subsistence farmers are plant breeders in many ways. They have maintained traditional varieties through various agro-ecological conditions and times, adapted them overtime and make them available for modern elite breeders to use. Their plant breeding may appear incidental but for some crops it is very deliberate.

3. What is the significance of protecting new plant varieties in Kenya?

Protecting new varieties for some crops is important for it provides the lever for recouping investments. For other crops, protection of new varieties may not be necessary particularly where a market for a specific crop does not exist. What is even more important is making the variety available to the farmers and it is questionable whether protection necessarily leads to availability.

4. Would a high number of applications and grants of PBRs be an indicator of the level of breeding in a subsector? If no, what would be such an indicator?

Prima facie yes. It would be an indicator of a level of breeding in a subsector globally,

not necessarily in the country where registration occurs. Same with patent applications, right? One true indicator of the level of breeding in a sector is the financial input in breeding itself. In any event not all breeding investments lead to a PBR particularly where breeding is public sector dominated.

5. What is the main purpose of the Distinctiveness, Uniformity and Stability test for plant varieties under the Seeds and Plant Varieties Act?

The purpose is to provide a measure for breeder innovativeness. But.....

- the Legal answer is: in Cap 326, to conform to UPOV 1978; in Cap 326 as now amended to comply with UPOB 1991.

6. Are all new food crop plant varieties uniform and stable? If no, what other salient characteristics do they have?

Not for me to answer but with a straying imagination, I can think of very many things. A Zimbabwean farmer once told me how he consumes some maize variety red in colour in order to protect his family from lightning strike.

7. The number of food crop plant varieties applications and grants as reported annually by KEPHIS lower than that of ornamentals. Would a review of the law, especially in regard to the standards of protection under the Seeds and Plant Varieties Act, help in increasing the applications and grants for plant breeders' rights in the food crop subsector?

Not necessarily in my view. The cost of applying for grant is also prohibitive; KEPHIS is severely understaffed to be able to carry out DUS tests; etc etc. But it is possible, if a host of other things are done as well.

8. Would you recommend introduction of differentiated standards of protection for ornamentals and food crops in Kenya? What would be the challenges of enacting and implementing such a standard?

In principal yes. I think the differentiating line is not food crop vs ornamental. The criteria for differentiation would be more than that-type of crop (hybrids vs OPVs; vegetatively propagated varieties; type of farmer; yields; market structures; uses; seed systems they operate in (closed value chains for cash crops; mixed for hybrids and legumes; informal systems mainly for vegetatively propagated varieties; etc) etc.

9. Is intellectual property an adequate protection mechanism to protect new plant varieties? If no, what other mechanisms can be used to offer protection to new plant varieties in Kenya?

For protection of NEW varieties of plants, it is sufficient. The thing is that for some crops, there is significant exploitation of the systems while in others the story is different.

10. Any comments or recommendations on the subject matter

Thank you for participating in this interview, for your time and your answers.

Appendix A
Key Informant Guide

Plant Breeders' Rights in Kenya: Examining the effect of the DUS Test in Food Crops and Ornamentals

Part A: Introduction

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Would you wish to participate in the interview?

Part B: Details of the Interviewee

Name: Dr. Evans Sikinyi

Occupation: A Plant Breeder and the current Chief Executive Officer, Seed Trade Association of Kenya, STAK.

Date of Interview: 24th Nov 2014

Part C: The Interview

1. What is the role of plant breeding in agriculture in Kenya?

It is important in development of New varieties required for improved agricultural productivity, taking into consideration the environmental challenges (Biotic and abiotic)

2. In your opinion, do farmers especially the subsistence farmers in Kenya; undertake any form of plant breeding? If yes, how can you describe their plant breeding?

Farmers have traditionally involved in selection of plants that suit their specific needs, hence to some level lead to crop improvement. Subsistence farmers have been able to select local varieties for their use, particularly for their localized needs

3. What is the significance of protecting new plant varieties in Kenya?

Reward those who invest in breeding

Encourage and incentivize continued investment in breeding of new varieties

Encourage introduction of foreign bred varieties that may be suitable for Kenyan market

Support the national research systems to survive – source of income for the public sector research whose varieties have been in use by the private sector with no pay

4. Would a high number of applications and grants of PBRs be an indicator of the level of breeding in a subsector? If no, what would be such an indicator?

Yes it would be an indicator on the level of varieties coming out and on the recognized need to protect for effective authorization and breeder protection for use of the varieties. In some types of varieties e.g. hybrids it may not be absolutely necessary to protect the hybrid itself, so long as the parents are not in the public domain

5. What is the main purpose of the Distinctiveness, Uniformity and Stability test for plant varieties under the Seeds and Plant Varieties Act?

To ensure the identity of the said or claimed new variety, ascertain ownership, and have the descriptors in place for identification purposes

6. Are all new food crop plant varieties uniform and stable? If no, what other salient characteristics do they have?

Depending on the nature of the crop and plant variety (inbred, hybrid, open pollinated, vegetatively propagated) the level of uniformity will vary. There are acceptable levels and standards defined for these various types.

For any variety to qualify to be a variety, it must remain unchanged over several cycles of multiplications. Otherwise it will differentiate into different plant types

Some improvement on varieties could be on unstable characteristics such as yield which is influenced by the environment, which is influenced by many factors apart from the genetic constituent of the variety

7. The number of food crop plant varieties applications and grants as reported annually by KEPHIS lower than that of ornamentals. Would a review of the law, especially in regard to the standards of protection under the Seeds and Plant Varieties Act, help in increasing the applications and grants for plant breeders' rights in the food crop subsector?

Some new varieties of food crops are commercialized without apply for protection, due to the nature of the crop. The breeders and the seed companies are able to collect their dues like through sale of seed. The farmers always will get new set of seed to obtain optimum performance. They are not easy to be copied or illegally multiplied, hence can be commercialized without protection, but of course there is still a risk of copying. Ornamentals are easily copied because of their nature of propagation i.e. vegetatively. One season will result in enough materials for large acreage. In this case application for protection is urgent.

There is no need to change the law, but to support and promote breeding and create awareness for need and value for protecting new varieties

8. Would you recommend introduction of differentiated standards of protection for ornamentals and food crops in Kenya? What would be the challenges of enacting and implementing such a standard?

No. there already exists different standards for testing the DUS in the protocols due to the breeding nature of the various crops

9. Is intellectual property an adequate protection mechanism to protect new plant varieties? If no, what other mechanisms can be used to offer protection to new plant varieties in Kenya?

A combination of protection and the nature of the breeding does help. Protection only makes sense if there is utilization of the new varieties hence commercialization.

10. Any comments or recommendations on the subject matter

There is no need to be concerned on the different levels of protection between food crops and ornamentals. It does not indicate less interest, just the need and effectiveness of one from the other. In Kenya there is more breeding activities in food crops than ornamentals. Ornamentals are easy to copy, and best grown in the tropics. Owners need assurance by protection before introducing their materials.

Thank you for participating in this interview, for your time and your answers