The role of IPR on maize output in Zimbabwe

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ACRONYMS

AEFJN	African Europe Faith and Just Network
CBD	Convention of Biological Diversity.
CIMMYT	International Maize and Wheat Improvement Centre.
FAO	Food and Agriculture Organization
FDI	Foreign Direct Investment
IPR	Intellectual Property rights.
IUCN	International Union for Conservation of Nature.
TRIPS	Trade Related Intellectual Property Rights.
UNDP	United Nations Development Programme.
UPOV	Union for the Protection of New Varieties of Plants.
WTO	World Trade Organization.

INTRODUCTION

Developing and least developed countries are home to more that 90% of the earth's biodiversity (Noah Zerbe, 2003), yet the benefits of research done out of them are rarely enjoyed by the local people but by the developed nations who have the instruments and resources to develop and then protect their findings. This is the reason why third world communities and governments have become suspicious over multinational seed corporations in third world countries (Correa, 2001). Large corporations in Developing countries use indigenous communities, plants and traditional knowledge to develop hybrid plants and animals. They then advocate for the adoption of strong Intellectual Property Rights (IPRs) at the expense of third world countries and thus increase their profitability through royalties.

Whether negotiated from a position of good faith or not, strong IPRs have left most developing countries with a need to renegotiate their IPR interests in any given forum they are afforded. It is thus feared that the introduction of tighter IPR rules has the potential of damaging the livelihood of both small scale and large scale farmers (Actionaid, 2003). Furthermore different schools of thought have been put forward regarding which course of action developing countries should adopt in coming up with intellectual property rights on plants and animals in a way that safeguard their interests. This however requires appropriate country and product specific studies in order to ensure that proper conclusions are drawn for relevant course of action by policy makers.

This paper therefore seeks to ascertain the role of IPR on Zimbabwe's maize output. Specific focus is given to the role of article 27 of the Trade Related Intellectual Property Rights (TRIPS) agreement as well as the Convention of Biological Diversity (CBD) in influencing maize output in Zimbabwe. The study attempt to bring out clearly some of the pertinent issues such as the implication of current IPR legislation, the extend to which private ownership of maize seed varieties restrict access to seed and therefore maize production, as well as possible implication of diverting from the status core. The study begins by providing a brief background, before providing a literature basis for the discussion. An analysis, which is drawn from statistical data sources, published and unpublished articles and the country's legislation among others, is then undertaken before summarizing the implications. Recommendation to relevant stakeholders concludes the discussion to this paper.

BACKGROUND

Maize is Zimbabwe's stable food and is grown both at a subsistence and commercial basis. Over 95% of Zimbabwe's subsistence farmers grow the crop with the remainder of farmers being hampered by the perpetual droughts. Unlike in most Southern African countries where less than 10% of seed used in small holder farmers is obtained from formal sources, Zimbabwe has about 98% of the country's maize area under hybrid seed (Carlk. K Eicher, 2000). This brings a number of challenges. First there is obviously the stiffening out of the existence of traditional maize seed production. Secondly and in my view the most important is the reliance by farmers on high cost seeds that tend to reduce farmers' profitability since hybrid seeds are more expensive than the traditional seeds.

Zimbabwe has seen the phasing out of indigenous plants in favour of more efficient hybrids (Chetsanga, 2000) to the extent that today, almost all of the country's maize production comes from hybrid seeds. It is important to bear in mind that production is dependant on a number of factors which include rainfall pattern, hectarage, planning and equally important seed varieties that have been developed over the years.

A number of scientific tests have been undertaken by both local and international companies and research institutions in a bid to continually improve maize production in Zimbabwe. Local researchers however lack the financing aspect so they tend to engage foreign researchers who will provide the financial aid and get the credit in the form of patterns. Even in institutions of higher learning, it is common practice that corporations who fund educational researches tend to include clauses that enable them to retain patterns in the event of successful research by local students. It is however a known fact that improved varieties have resulted in multifold production, improved crop quality that is drought resistant and varieties that require short periods of maturity (CIMMYT, 2000).

While this is a positive development, it has created its own challenges regarding ownership of maize plants, allegations of unjustified profiteering and business ethical behaviors related to intellectual property rights. Zimbabwe, through its legislation is one of the developing countries with a strong IPR inherited from colonial times. IPRs have been in use since 1967 to address issues of investment and protect inventors as a way of promoting development. The country is a signatory to the Convention on Biological Diversity (CBD) 1992 as well as the TRIPS agreement under the WTO (1994), but is yet to assent to the Protection of New Varieties of Plants (UPOV).

The TRIPS agreement thus forms a very important role in shaping the country's IPR rules and regulations. It should be noted from the onset that developed countries are the main proponents of trade related intellectual property rights (Ratnakar Adkari, 2005). Unlike other trade agreements under the WTO, the TRIPS agreement does not seek to liberalize but to establish rules of protection of intellectual property (Corea, 2006).

One of the central agreements of TRIPS is for member states to adopt patents for any inventions, whether process or product in all fields of technology (Article 27.1). Of great importance to farm production and the focus of this study is Article 27.3(b) of the TRIPS agreement which gives a leeway in excluding plants and animals from patentability. However the same article further makes it mandatory for countries to protect plants and animals in their own way if they cannot protect them through patents. A combination of the two is also acceptable. The mandatory enforcement of patent protection has been viewed as having serious consequences on farm production in developing countries (Actionaid, 2003).

Under this view, TRIPS are seen as allowing monopoly rights over plant genes and their characteristics. The implications are that farmers will no longer have control over certain seeds and in some cases (depending with the level of TRIPS application), over practices they may have freely employed in the past. An important aspect in maize production is that farmers use their knowledge as a key reference point, which scientist or researchers should consider if they wish to improve farmers' welfare[1].Given that patents last for twenty years and the estimation that only six multinationals own over 60% of food crop patents in the world[2], there is bound to be monopoly in seed production, which ultimately affects food output.

It is against this background that countries that oppose article 27.3(b) seek to review this provision to allow for greater flexibility. From a developing country perspective, patents and other IPR forms have serious implications for communal livelihoods that have been in existence for a long time (AEFJN, 2002). Thus the Convention on Biological Diversity (CBD) recognizes biodiversity as a way of protecting community rights. Unlike the TRIPS agreement which aims at protecting private property, CBD tends to advocate for a redistribution of royalties and benefits that arise out of plant protection. Given the need to protect plant varieties as a way of rewarding innovators on one side, and the desire to ensure fairness in benefits distribution, there

[1] See Belon (2001) for a detailed explanation in "Description of participatory agriculture research methods"
[2] See Hope Shand (2002) in Trade Related Intellectual property Rights.

arose a need to bring harmony between TRPS article 27(b) and CBD. Thus paragraph 19 of the Doha Ministerial declaration calls on The Council for Trade Related Intellectual Property Rights (TRIPS) to consider the link between the TRIPS agreement and the Convention on Biology Diversity (CBD). There are however differences on how Article 27(b) should be treated in relation to CBD.

LITERATURE REVIEW

IPR and Economic development

Intellectual property rights (IPR) are considered as an effective way of ensuring innovative ways. Article 7 of the TRIPS agreement states that *"Protection and enforcement of intellectual property rights should contribute to the technological innovation and the transfer and dissemination, to the mutual advantage of producers and users of technological knowledge ...."* According to Maskus (2000), strong IPR should provide incentives for innovation and expand innovation and technology flows to developing countries. It is argued that privatizing knowledge acts as an incentive for creativity and innovation as there is guarantee to recover expenditure and make profits. Weak IPR is therefore regarded as a barrier to technological transfer (Sherwood, 1990).

It is however argued by some that IPR does not play an important role in stimulating innovation in developing countries (CIPR 2003). It however depends on whether one is looking from a developing country point of view or a developed country's view. For example, Panagariya (1999), argue that Strong IPR tends to benefit developed countries whilst hurting developing ones. Richardson and Gaisford (2000), argue that stronger IPR protection is likely to have mixed results in developing countries, increasing technology in one field, whilst impeding development in another. Tansey (2004) also notes that the effects of a strong IPR on developing countries are uncertain.

Some empirical studies have also shown that IPRs reduce profitability of farmers. A 2000 World Bank report, argues that if the United States had been made to pay loyalties on germplasm from the south, it would owe USD 320 million for its agricultural products and would thus reduce its profits from agriculture. Another empirical analysis carried out of maize breeding in Mexico by A Léger, (2005) showed that there is little evidence on the effects of intellectual property rights on a technologically advancing developing country.

IPR and binding agreements on plants

Patents and Plant Breeders Rights or Plant variety protection is the main systems that protect intellectual property rights on plants. These systems are covered in the Trade Related Intellectual Property Rights (TRIPS) under the World Trade organization (WTO) agreements. One of the pertinent issues under discussion is the provision of or exclusion of patent protection for plants and animals. Article 27.3(b) of the TRIPS agreement states that "*members may exclude from patentability, plants and animals other than micro-organisms, and essentially biological processes for the production of plants or animals other than non-biological process. However members shall provide for the protection of plant varieties either by patents or by effective sui generis system or by any combination thereof. The provision of this subparagraph shall be revised four years after the date of entry into force of the WTO agreement*"

While the meaning of *effective sui generis* has been highly debated, it has been suggested that plants may be subjected to a specialized form of protection. The sui generis options that most developing countries prefer are those that promote rights of farmers' variety and landraces (Blakeney, 2001). There are however debates on reviewing of Article 27.3(b). A note by the secretariat of the WTO (2006)[3], outlines the four schools of thought regarding how Article 27.3 (b) should be interpreted.

There are those who think that exceptions to patentability provided by article 27.3 (b) should be removed to extend patent to all patentable inventions of plants and animals. Then there are those who are of the view that the article should be maintained as it is. The third groups are of the view that the exceptions to the article should be maintained but clarifications or definitions used in the article should be made with a view to clarify difference between plants and animals. The last view is for those who believe that review is to enable a reconciliation of TRIPS with the Convention on Biological Diversity (CBD).

The Convention on Biological Diversity (CBD), which was signed in 1992, has tried to define IPR in the context of conservation and sustainable use of generic resources, with the rights over such resources being vested in the state of origin. Conceptual debates on CBD started in the early 1990s with the development of a regime on access to genetic resources (Louafi and Tobin, 2005). This idea has now found its way into international fora such as the WTO. Article 8(j) of the convention requires that "*Signatories shall, respect, preserve, and maintain knowledge,*

[3] See the Review of provisions of Article 27.3(b), Summary of issues raised and points made of 9 March 2006.

innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation and sustainable use of biological diversity, and promote their wider application with the approval and involvement of such knowledge, innovation and practices." It seeks to strike a balance between interests of those countries that are seeking facilitated access to genetic resources and those holding the genetic resources and traditional knowledge (IUCN, 2005). Thus it argues that in order for researchers to carry their research on plants and animals, they need prior informed consent from the source countries.

ANALYSIS

Policy Framework and Structure of maize seed producers

An examination of the country's policy framework regarding IP indicates an unclear framework of the country's priorities. There is no official publicized and documented course of action that shows the country's strategy in addressing issues of how Zimbabwe can improve its IPR policy on maize production. According to Shumba (2003)[4], a document was once prepared but could not be integrated into the national development plan, and thus became a mere reference document rather than a guidebook for sustainable development. It would appear as IPR has been used as a pawn of attracting foreign investments guided by the theory that foreign direct investments flows in where there is a strong IPR. It is therefore clear that unlike some neighboring countries in Southern Africa, there is no framework that guarantees the right of indigenous communities to control of maize seed production in Zimbabwe. However, information gathered from different sources regarding maize seed policy shows that Zimbabwe has employed seed price controls[5], which is backed by subsidizing seed producers with the help of donor agencies for the benefit of farmers. Maize seed imports are also permitted to cater for any seed shortages. It is also mandatory for every maize seed to be certified while royalties on both public and private sector seed production is permissible.

An analysis of the structure of maize seed producers in Zimbabwe show that there are a total of six institutions involved in hybrid maize seed production and distribution. Only one of these institution is a public institution while the remaining five are private owned. Of the five, two are multinational companies who however control over 80% of the country's seed market. This

[4] Enock shumba is the project coordinator of the biodiversity project, in the article "Zimbabwe Biodiversity Strategy and Action plan."

[5] See CIAT,CRS,World Vision, Care, Agritex & CIMMYT (2009). Seed system security assessment in Zimbabwe. A study funded by the US Agency for international development office of foreign disaster assistance in July 2009 Rome. International center for tropical agriculture.

structure, if not closely monitored can result in unjustified profit taking through increased prices, which might in turn affect output through reduced production.

Zimbabwe's IPR Legislation

A look at Zimbabwe's intellectual property rights legislation shows a long history dating as far back as 1967 when the country was still under colonial rule. Plant breeders' rights act (18.16) and the Patent Act (26.3) form part of this legislation. It should be noted however that while there has been an appreciation of attracting investments, the Zimbabwean government has found no need of revisiting some of this legislation. This is demonstrated by how some of the pieces of legislation have been left idle for long periods of time. For example, The Copyright and neighboring act (26.5) was enacted in 2000 but only became operational after 2002 (Caroline Ncube, JILT 2002). Amendments to the Patent Act (26.3) passed through parliament in 2001 but are yet to be approved by the head of state. Important components of the Plant and Breeders Act (18.6) were last revised in 1974 (before independence). This goes to show the level of prioritization of IPR laws, especially when it comes to implementation, suggesting that its impact on the country's staple food (maize) is either too remote or least understood by policy makers.

A closer analysis of the legal statues suggests that amendments to Zimbabwe's IPR were mainly to fulfill international obligations. For example, the current patent bill's preamble states that "*The bill will amend the Patent act (26.3) to give effect to Zimbabwe's international obligations under the agreement on Trade Related Aspects of Intellectual Property Rights of 1994 and the Patent Co-operation of 1970. In addition, the bill will make other minor amendments to update the act*" This implies that any motivation of legislating IPR was reactionary. Such approaches tend not to serve the interests the country. For example, section 34(2) of the patent act (26.3) permitted the state and statutory bodies in certain circumstances to make use of patent invention free of royalty. The amendment however proposes a change so that the act aligns with article 31(h)[6] of the TRIPS agreement at the expense of former beneficiaries.

It should be noted that Patent act (26.3) of Zimbabwe allowed granting of patent rights to *any invention*. Thus maize hybrid plants were protected under both the Patent act as well as the Plant Breeders' Rights act (18.6). The new patent bill however prohibits the grant of patenting of plants (among others) for biological purposes as permissible under Article 27.3 of TRIPS. This has an implication of removing any protection of patenting maize crops and the seeds. However,

[6] Article 31of TRIPS advocates for a fair compensation of the patent holders by governments or authorities.

protection still exists through the Plant breeders' Rights act (18.16), which allows for registration of plant breeders rights, in respect of certain varieties of plants and the protection of the rights of persons who are registered holders of such rights. An important thing to note is that the rights of small holder farmers are protected. Thus the Plant Breeders rights act gives rights to farmers who cultivate less than ten hectares (small scale farmers) as well as communal farmers to use the harvest from the protected plan, allowing for multiplication and exchange of seeds with other farmers. In this way local farmers are assured of seed if they cannot afford the highly priced protected seeds.

Analysis of maize output

As compared to the 1980s, there has been a vast increase in novel variety of maize in Zimbabwe. According to Devlin Kuyek (1999), Zimbabwe had more than thirty-one maize genera or species protected under this act by 1999. In 2007, the number had risen to 101 maize hybrid and 8 open pollinated varieties (CIMMYT and others 2009). It is generally believed that genetics has improved productivity, profitability and sustainability of the maize crop. A number of researches have been carried out on maize varieties through tissues culture techniques for elimination of diseases, drought resistance, effective propagation and development of pesticides.

According to theory, the availability and supply of maize seed influence farmer's production decisions, which in turn reflect total output of maize. However output data of maize production for the period 1994 to 2008 seem not to support this assertion. As is shown in figure 1 below, maize production has been inconsistent in the period under discussion. One would expect a certain level of the reflection on improved protection in maize output. The inconsistencies in maize production tend to support some more pronounced aspects such as rainfall pattern, changes in the country's land policy etc. Thus it does not bring out the possible impact of improved variety, nor does it reveal any effect of IPR.

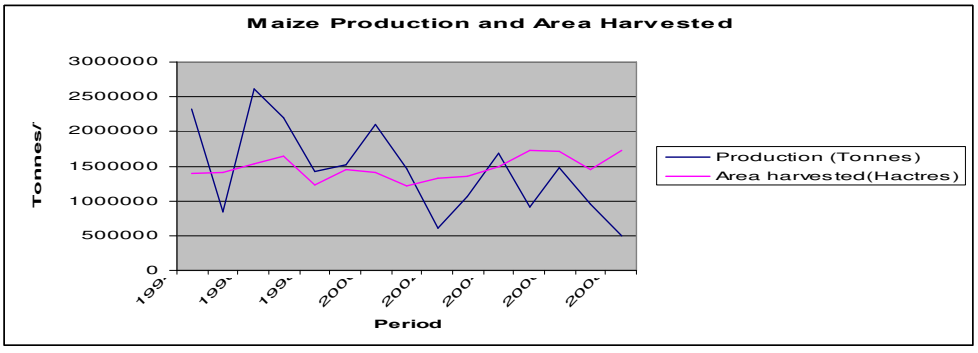

Figure 1. ***Source: FAO Statistics 2009***

There has also not been any significant changes in the land under maize cultivation, which ranges from 1 223 070 hectares in 2001 to 1 730 000 in 2008. The amount of seed applied over the period also does not seem to reflect any serious impact of improving variety; neither does it show serious shortages as a result of possible monopoly by patent holders. The diagram below shows the seeds employed by maize farmers from year 2001 to 2008.

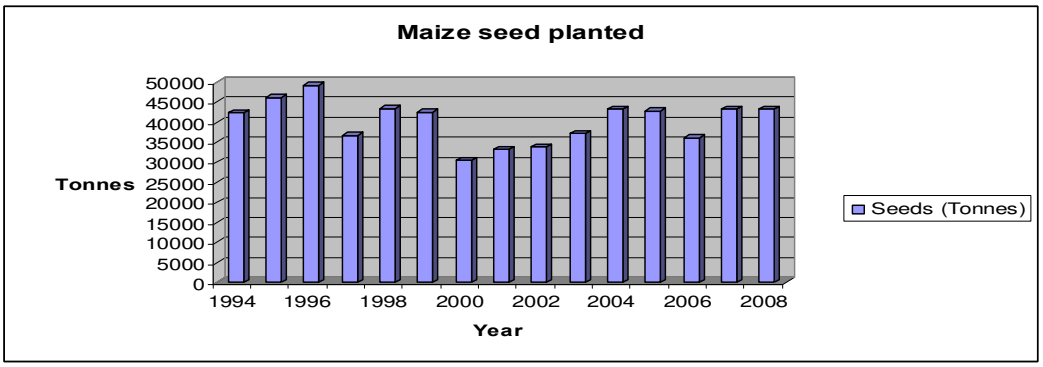

Fig 2. ***Source: FAO Statistics 2009***

The main reason however, for limited evidence of seed quantity and quality impact may be because of the country's deliberate decision to subsidize seed prices for farmers. If the subsidies were to be removed, the likely impacts of patenting might become evident, especially the relatively high cost of producing seed as compared to other African countries.

Possible implications

What then does the current provision of protection of plant varieties mean to Zimbabwe's maize production? One evident issue is that continuation of protection of plants and animals will promote investment in research. There is bound to be increased research particularly in maize varieties in order to meet the dynamic challenges of food production. The fact that currently there are five private maize breeding centers in Zimbabwe despite the political challenges regarding agriculture in Zimbabwe is evidence enough. Investors in maize seed research are still confident of recouping their investments even in such a drought stricken and politically unstable environment. With the increased investment comes development in agriculture technology both directly and indirectly. Zimbabwe stands a chance of being a suitable destination of FDI given its IPR laws. There is therefore a strong incentive to maintain the status core in support of those countries that are of the opinion that article 27(b) of TRIPS should be removed from the TRIPS agreement.

Having established that Zimbabwean protection does not extend to traditional processes and commonly practiced farm knowledge, there is likely to be an exploitation of these processes and farm knowledge by researchers in developing their seed varieties, which in turn they will protect through plant breeders act. One clear observation is the non benefit of the communities and farmers providing this knowledge as a basis of research. In my view, this represents a clear exploitation of public knowledge for private benefit. A clearer policy therefore would necessitate the recognition of traditional knowledge as well as ensure that benefit accrues where it is due. This line of thinking would therefore support the school of thought that seeks to respect, preserve, and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant to the conservation , and that the review of the article 27.3 (b) of TRIPS that seeks to harmonize it with CBD is paramount. The unfortunate thing however is that CBD is not strongly recognized as a tool of protection as is the TRIPS agreement. Enforceability at a country level therefore becomes a major challenge.

The third possible implication arise from the view that there seems to be no serious implications of both article 27 3 (b) and the CBD of maize production in Zimbabwe today as there is room for country states to exclude for patentability inventions of plants and animals. This is why there are suggestions in the country's patent amendment bill to exclude them just as a way of creating policy space. Furthermore, since patents will expire after twenty years, the patented knowledge and information will one day enter the public domain for the benefit of the farmers as well. During the twenty year period, government can provide an appropriate policy that provides subsidies for maize seed to neutralize the effect of higher seed price costs brought about by the patent effects. In this way fairness is achieved as both the inventors as well as the farmer's interest are catered for.

The other implication relates to inconsistencies inherent in Zimbabwe's legal statues and purported[7] policy framework. These disjointed pieces of legislation tend to ignore the importance of the role of IPR on maize production as priority in the broad policy framework. Whether such inconsistencies arise as a result of deliberate strategy or a general lack of understanding of IPR issues is another debatable issue which is outside the scope of this paper. The underlying conclusion is that such inconstancies exist and that they pose defined implications on maize production. The only challenge is that it is difficult to predict such defined implications, which tend to depend on the predominance of one aspect over the other at any one particular time. This

[7] Zimbabwe does not have a clearly laid down policy framework for IPR in relations to agriculture production.

tend to identify with the school of thought that, we may need to review article 27 3(b), but only when the need arises.

CONCLUSION AND RECOMMENDATIONS

In conclusion, it is important to stress that while the role of IPR on maize production is currently undesirable, it is sometimes exaggerated. The strong link that is normally depicted in literature is rather subdued in the case of Zimbabwe. Secondly, there is no single solution to the issues surrounding intellectual property rights in maize production in Zimbabwe. This is because IPR policy framework is a subset of a broader economic framework. However it is clearly evident that any measure that allows more policy space is admirable. Some recommendations are thus discussed as a way forward in addressing possible specifics to the above subject.

Firstly, as should happen in all other sectors, the need for a grassroots founded framework model on intellectual property rights in maize production is long overdue for the country. Such a framework allows for a general direction that enables appropriate policies to be established is addressing challenges embedded within the current scenario. The framework should include access to biodiversity, participation of local communities and farmers as well as how benefits derived from the communities can be shared with researchers and financiers of better maize hybrids in Zimbabwe.

In the interest of local communities, it is necessary that indigenous farm knowledge and processes be protected as well. Finalization of amendments of the patent bill to remove extension of the patents and plant variety protection will be a welcome move for the local farmers and communities. Government, with the help of civil society therefore has a role to ensure dissemination of information and a general understanding of implications of intellectual property agreements on the sector. The CBD provisions should therefore be pursued and supported in trade negotiations.

The use of TRIPS agreement as a pawn to achieve greater investment through foreign direct investment is rather inappropriate. This is because such a move normally leads to strong intellectual property rights which are not appropriate for a developing country. Rather strong intellectual property rights tend to limit the country's policy space, while promoting the interests of developed countries. It is therefore recommended that future amendment to Zimbabwe's IPR should not only be for the fulfillment of international obligations but should be centered on internal interests.

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