

OPEN SOURCE SEED SYSTEMS (OSSS) IN KENYA: CONSTRAINED OPPORTUNITIES

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Abstract

We live in an era of privatization in different sectors of Kenyan economy; Agriculture, Transport, Education, Mining, Health, Manufacturing and Communication. Common goods end up under the control of investors who obtain exclusive rights over their utilization. This creates a debate on profit motives vs. social welfare. The trend has been evident in the agricultural sector.

Seeds which used to be a cultural heritage and a God given gift now are controlled by private persons/entities. Patents and Plant Breeders Rights limit how farmers utilize them. Surprisingly, patented seeds at farmers' store or farm remain the property of the breeder. Farmers' rights on multiplication, reproduction, seed saving, sharing, selling and exchange are limited.

These developments call for a return to commons through Open Source Seed Systems (OSSS) in Kenya. The system promotes access to seeds without restriction in non-private, commonly owned seed sector that work for local food system meeting the expectations of all the stakeholders including farmers, breeders and consumers. This creates equilibrium between profit motives and social welfare.

This paper presents the new concept in Kenya as an additional seed system. The paper highlights the bottlenecks surrounding its actualization and explores possible opportunities in Kenya. The findings have been obtained by analyzing Kenyan seed sector, local and international legal framework. The working group provides various recommendations targeting different stakeholders for the implementation and success of Open Source Seed System (OSSS) in Kenya.

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1.0 Introduction

Seed is the basic input that sets the potential for agriculture and ensures that communities put food on the table. Definitely there is no agriculture without seed, we can do without other inputs such as fertilizers and agro chemicals but there is no farming without seed. Seed safeguards our agricultural heritage and the agro biodiversity hence it is the soul in agriculture. Seeds are at the Centre of survival of the mankind. Just like other common goods that determine the survival of humanity, nature made seeds available to everyone irrespective of their economic standing hence communities should freely access seed. Besides seed being the core of farming and food security, there has been concerted effort by the private sector allocating themselves control and ownership of seeds and excluding everyone else through unfavorable seed laws. The impact has been dire to the agriculture: loss of agro biodiversity leading to poor diets and poverty among small scale farmers due to difficulty in accessing seed.

1.1 Commercial seed sector

The commercial seed sector is also referred to as the formal seed system in Kenya. The sector consist of seed companies (seed merchants) who either produce the seeds in Kenya or who by large extent import seeds and pack in a centralized place. Breeding, production and marketing of seeds is strictly regulated by Kenya Plant Health Inspectorate service.

Before a Seed Company starts operations in Kenya, they have to apply for a seed merchant license from KEPHIS who send the inspectors to assess companies' knowledge and facilities and issue license if satisfied. KEPHIS also issue seed import license if the seeds meet the predetermined standard.

To produce seeds locally, proof of ownership is required before inspectors can visit your farm for certification. For a new variety, seed merchant need to apply for registration and submit samples to be tested on distinctive uniformity and stability (DUS) and national performance trials (NPT). Varieties are released and added to the national varieties list displayed on the KEPHIS website only after passing the two tests. If the varieties pass the two tests, the seed merchant is awarded IPRs and therefore exclusive rights to own and exploit the variety.

In addition to Kenya Plant Health Inspectorate Service and Breeders/Seed Companies there exist other stakeholders in this seed sector. They include; Plant Breeders Association of Kenya

(PBAK) which brings together plant breeders together. The body serves various interests of their members like pursuance of intellectual property rights among others.

Seed Trade Association of Kenya (STAK) which provides a forum for interaction and information exchange, lobby for an enabling seed business environment, enhance networking among members and promote development of formal seed trade.

Seed stockists who act as seed distributors to farmers in towns. Registration with Kephis is a pre-requisite to start and run their business. However, their products stocked in their agro-shops are not limited to seeds. They also sell agro-chemicals which are more profitable compared to seeds which are demanded during planting season.

Seed growers form another component under this sector. Upon application to KEPHIS by a farmer to multiply seeds for a given breeder or a seed company, the regulator does field inspection. The farmer is also assessed on his/her technical knowledge and experience in seed production. Upon approval, the farmer obtains initial seeds from the breeder/seed company for production.

The breeder has two options in seed production; production at their premises or contractual seed production with seed growers. In either case, the breeder/seed company engages KEPHIS through the production for on-site inspection and sends samples for testing for every batch of seeds packaged. Kephis then offer stickers with codes detailing various test results and expiry date of the certified seeds. The certified seeds are then distributed to agro-shops.

1.2 Farmers' managed seed system

The farmer managed (informal) seed sector has been in operation in Kenya before independence particularly for the small scale farmers who exchanged indigenous seed and knowledge. According to the National Seed Policy document for Kenya, the source and quality of most of the planting materials and seed purchased, multiplied and marketed by the informal/farmer managed seed sector may not be known, yet this is the major source of planting material for the farmers. Farmer sources of seed include farm-saved seed, farmer-to-farmer exchange, local markets where farmers buy grain but used as seed, Non-Governmental Organizations and Community Based Organizations seed (Kenya seed policy 2010). This sector ensures food

security and farmers' sovereignty over their genetic resources. In spite of the importance of this sector Kenyan laws do not favour it but often criminalize it as illegal.

1.3 Objectives

1. This paper seeks to define the OSSS concept
2. The paper will highlight the bottle necks that prevent open source seed system from thriving in Kenya
3. It will analyze the opportunities for OSSS in Kenya

2.0 Definition of OSSS concept

2.1 What is open Source Seed Systems (OSSS)

Open source seed systems (OSSS) is accessing seed without restriction in non-private, commonly owned seed sector that work for local food system meeting the expectations of all the stakeholders including farmers, breeders and consumers. The term open source is derived from computer science. It refers to free and open access to computer source code facilitated by a clever hack of intellectual property rights. Open source is not the same as open access, which is completely free and unlimited access. Essentially, open source ensures access to a common good by protecting it against privatization “protected commons” (Kloppenburg). According to Kotchi 2016 OSSS constitutes, in principle, a conceptual framework that could be adapted to protect seeds. It is the freedom to use patented seed as you wish, for any purpose, the freedom to multiply and trade on the seed but operating within the law. According to HIVOS OSSS is an express and explicit commitment legally and, or ethically in order to maintain freedom to use the seed and any of its derivatives

The OSSS concept was introduced in Kenya by HIVOs through an international workshop in Ethiopia at the end of 2016 followed by a national workshop in early 2017 in Gilgil Kenya. Hivos’ Open Source Seed Systems (OSSS) program aims to reverse this trend of patenting and protecting seed by promoting the freedom to use seeds and stimulate breeding, diversification and resilience. Open source seed systems lead to ‘protected commons’, registration and sharing mechanism through pledges, licenses or other forms of contracts to ensure seeds remain common goods on subsequent breeding. In Kenya the seed industry is supported by research on food, industrial and export crops, which supply seeds and planting material mainly for hybrid Maize and exotic vegetables. (Kenya seed policy, 2010)

Adoption of OSSS in Kenya is likely to positively impact food diversity, seed access and food sovereignty, aspects that are not favored by the current IPRs based seed system.

3.0 Bottlenecks facing OSSS in Kenya

3.1 Monopoly by large multi-national seed/ chemical corporates

Over time, many formal seed organizations have taken on a global trading perspective, and multinational chemical companies have bought into the seed sector for them to diversify their product base and to capitalize on the seed sector. Industrial inputs and mechanization have spread throughout different parts of the world, but particularly so across Africa and Kenyan agricultural sector. This model has generated various negative socio-environmental, consequences related to climate change and environmental pollution. The increasingly artificial nature of agricultural ecosystems has also caused a reduction in the diversity of crops and varieties. The introduction of chemical, mechanical and generally conventional agriculture has significantly increased leading to the loss of our agro biodiversity.

Industrial agriculture has led to the predominance of corporates involved in seed and agrochemical trade in Kenya. With the exception of a few Kenyan-based seed companies, the private seed sector is dominated by a handful of transnational corporations (TNCs), as it is in the rest of the world. According to a report by food alliance for food sovereignty in 2015, just five companies control 75% of the global vegetable seed market (Monsanto, Bayer, Syngenta Dupont and seedco). Two companies – Dupont and Monsanto – together have a 73% share in the US corn seed market. This monopoly over the seed denies a common farmer the freedom to access and use their genetic heritage; seed.

Over the past decade there have been so many mergers and acquisitions in this sector that today a company like Monsanto has a stake in almost every crop and in every region of the world. The same corporations control over 70 per cent of the global pesticide market. Because the research and development costs are high, the companies believe that they can recover these expenditures through monopoly, intellectual property rights and royalties. It is true that 78% of the seed in Kenya comes from the farmer based seed systems at the same time small holder farmers produce 80% of the food commodities in Kenya (seed policy paper 2010). However, commercial seed system has made them spectators on charting direction about the most important tool of their trade; seed. Seed is no longer commonly accessible due to high prices and not due to lack of its supply. On the other hand food consumers are staring at the menu in a field that is not leveled

and is not uniform for everyone to make choices. Exclusive ownership of seed by the traders leaves no escape route for the two prisoners (Farmers and consumers) leading to loss of crop diversity resulting to poor diet for all of us.

With the exception of maize and a few exotic vegetables, the bulk of the seeds used by farmers are farm saved or obtained through seed exchange from the farmers market within the villages. However, seed laws in Kenya are skewed to support the 20% seed need supplied by commercial seed system and criminalize 80% farmer based seed system that serve the majority (Seed policy 2010). Loss of agro biodiversity is not the only setback attributed to legal frameworks, but their effects such as pollution and contamination of food systems by agrochemicals. Seed laws were adopted as a legal support for the industrialization of agriculture yet the protection of agro biodiversity by the same law is not clear. Large companies in the seed sector make it difficult for small scale seed traders to operate hence minimal chances of OSSS thriving in Kenya.

3.2 Legal and regulatory framework on seeds trade

Kenya ratified the International Convention for the Protection of new Varieties of Plants (UPOV) Convention, 1991 and domesticated its provisions through the Seeds and Plant Varieties Act. One of the peculiarities 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 Distinctiveness, Uniformity and Stability (DUS) test for registration of Plant to award 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 Plant Breeders Rights (PBRs), UPOV developed examination guidelines 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. In Kenya these laws are administered and implemented by the Kenya Plant Health and Inspectorate Services (KEPHIS). The inspectorate in such cases does not have to undertake the examination process but wholly relies entirely on UPOV guidelines. The uniformity of the application of the test is

done against all applications for all new plant varieties filed at KEPHIS. To establish variety identity, release new varieties, generate descriptor for use in seed certification and variety maintenance, grant of Plant Breeders Rights the examination generates a description of the variety, using its relevant characteristics (descriptor) (e.g. plant height, leaf shape, time of flowering).

The variety Release Committee only considers varieties which have undergone Distinctness Uniformity and Stability testing successfully. The varieties are then included in the national list; a list of varieties of agricultural, vegetable and fruit plant species whose seed can be legally produced and sold in Kenya with breeders having all the rights of ownership and farmers handling the varieties seeds only through the breeders permission making it illegal to save, share, sell and exchange seeds (seed savers network, 2017).

The provisions of Agreement on Trade Related aspects of Intellectual Property Rights (TRIPS) agreement on *sui generis* was to give member states a window to customize the intellectual property rights on new plant varieties in their countries. However the dream was prematurely shattered by Arusha Protocol for the Protection of New Varieties of Plants (ARIPO adopted at Arusha, Tanzania in July 2015). This protocol created a regional plant variety protection system in favour of plant breeders only.

The positioning of ARIPO office as the provider of breeders Rights in Africa upon application but fails to limit the same rights upon expiry is ambiguous. This also raises concerns on our Kenyan Seed and Plant Varieties Act, cap 326 which provides for expiry of breeders rights after 20 years for seeds and 25 years for seedlings which was in conformity with UPOV 1991. According to ARIPO the protection of breeders' rights has no limit. This makes OSSS a challenge since breeders can hold the rights for as long as they wish. In a nutshell the commercial seed system in Kenya thrives on IPRs that directly hinder OSSS development.

3.3 Theft of farmers' varieties and lack of recognition of farmers' varieties

For many decades, crop genetic improvement has depended on farmers' selection of locally adapted materials, often referred to as land races, using visual characteristics such as yield, grain

size and colour. Similarly over many years seed distribution was a farmer-based activity, with farmer-to-farmer exchange and local trading in markets.

Primarily different crops and varieties have distinct and unique characteristics. Food crop varieties in Kenya are mainly developed by the farmers who breed for various purposes including taste, and performance 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. 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 requires a variety to be not only new and distinct but also uniform and stable. These realities make most farmers' varieties ineligible to joining the 'super varieties list' allowed to trade legally. In this case most farmer varieties end up in the wrong hands, privatized and patented by individuals.

The UPOV laws escalates the problem further because it fails to recognize the role played by the farmers and gardeners in creating and maintaining distinctive crops varieties. Effects for the uniform application of these standards have been the dismal number of applications for registration of food crops. Small scale farmers constitute by far the largest sector of seed breeders in Kenya and they have cultivated the abundant diversity that sustains the country's food security. Criminalization of these varieties has been the main cause of loss of crop diversity in the garden. (Seed savers Kenya annual report 2017)

Lack of recognition and protection under the law of farmer's varieties has created an avenue for theft by breeders and commercial interests obtaining PBRs on farmer's varieties. (This is the biggest bottle neck to OSSS). Part IV section 18 of seed and plant varieties act set condition for granting breeders rights to the applicants. Condition number 4 on granting breeders rights state that: "an applicant for plant breeders' rights must be the breeder, persons who have independently bred, discovered and developed a plant variety". The word 'discover' is a loop hole used by breeders to acquire PBRs on farmer's varieties. The conditions set by the act cannot constitute prove of ownership of the varieties. Many farmers' varieties have ended up in private hands with public agriculture research institutions being used as conduits a few examples include Mugombero, Managu, Terere and many varieties of small cereals and legumes

The plant Act also criminalizes the sale of uncertified seeds and a fine of Sh20, 000 has been set for anyone who contravenes these provisions. Section 10(4) provides that any person who hinders the seed inspectors or otherwise contravenes any provision of the Act shall be guilty of an offence and upon conviction, shall be liable to a fine not exceeding Sh1 million or to imprisonment for a term not exceeding two years, or both. The smallholder farmers who deal with the local and indigenous seeds have to adhere to these requirements on seed certification otherwise they will be committing an offence. The plant varieties act make it difficult to be seed merchant or deal in seed trade as small scale farmer. The process of registering and certification of seed is very expensive. The process of seed certification is tied to registration end up with IPRs. All these laws on procedures and registration make OSSS very difficult to operate in Kenya.

3.4 Funding for characterization and registration

Recently there has been a sharp increase in the number of registered and protected varieties with most of them being registered and owned by government institutions like the Kenya Agriculture and Livestock Research Organization (KALRO). Ironically, KALRO is a public institution funded by tax payer's money which means therefore it should hold PBRs in public interest making them available for use by all Kenyan people. The tragedy is that the KALRO and some public university get donor funding to characterize and register local varieties and the PBRs are handed over to the private sector. Ideally registration activities by KALRO and other public research institutions should be funded by the government to ensure registered varieties remain common goods for all.

The process of variety registration and commercialization is both expensive and technically out of reach to the majority who would have wanted to join the seed business. Government is not funding protections and crop registration. Resources are not directed to the public sector for it to register seed and be declared as open source and therefore quite expensive and difficult for OSSS to thrive in Kenya.

4.0 Opportunities for OSSS in Kenya

4.1 The Agreement on Trade Related aspects of Intellectual Property Rights (TRIPS)

Kenya became bound to TRIPS in 2013 upon expiry of its grace period before operationalization for developing countries. Principle 1 of this agreement provided for prioritization of public interests in sectors of vital importance. This can be termed as the primacy of human rights over intellectual property rights. This is further amplified by the provisions of '*sui generis*' as an alternative intellectual property protection on new plant varieties for member states where patents were not provided. This gave countries a room to develop a compatible protection system applicable to its socio-economic environment. This was an opportunity to set equilibrium between the business and public interests.

In this interest thus the Kenyan government should amend Seed and Plant Varieties Act to give breeders a declaration clause as Open Source. This should be followed by regulations to affirm it the amendments and allow OSSS in Kenya. The concept of open source seed should also be included in the principle act such that the commercial seed sector operates without patents.

4.2 The Plant treaty

Kenya is a signatory of International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGRFA). This treaty recognizes farmers' rights to save, sale share and exchange seeds. Recognition of farmers' varieties and rights by Seed and Plant (Amendment) Act, 2015 is the ultimate opportunity to OSSS. Seed and plant Act amendment in 2015 anchored farmer's right to save, exchange and sell seeds as provided by ITPGRFA. The draft regulations to implement the provisions of the act envisage a different system of seed registration and certification away from IPRs and DUS based on UPOV guidelines. This Act regulates transactions in seeds, including the one's involving indigenous seeds. The amendments for 2015 have amended Section 27A and established the Plant Genetic Resources Centre, which shall be responsible for the protection the ownership of indigenous seeds and plant varieties, their genetic and diverse characteristics, associated indigenous knowledge and its use by the communities of Kenya.

4.3 Varieties owned by public and charity organizations

There are various public and charity research institutions in agriculture who have registered various varieties through the IPRs/ DUS systems that are by default open source given their lack of direct link with private sector for example CYMMIT, ICRISAT. Kenya Agricultural Research Organization by itself own and maintain 28 varieties of sweet potatoes, 19 varieties of cassava, 18 varieties of potatoes, 144 varieties of maize, 8 varieties of finger millet, 9 varieties of cow Peas, 39 varieties of sorghum, 40 varieties of wheat, 54 varieties of beans together with public universities, and 11 varieties of pigeon peas. Declaration of the KALRO registered varieties as OSSS will allow small seed enterprises focused on a crop or a locality, effectively address challenges of agro diversity and seed access to small scale farmers. It is also worth noting that most of the varieties released by KALRO are not finding their way into the seed market because the existing large players are not interested in regional specific varieties that could limit the trading volumes. Stakeholders discussions on patents held by public interest institutions arbitrated through national seed tribunal or the judicial process might be the only activity required in unlocking this potential. This is a huge opportunity for unlocking the potential of OSSS in Kenya.

4.4 Varieties whose protection period has expired are essentially OSSS

Registered seeds are legally allowed 20 years protection period in Kenya after which the breeders' loss IPRs and the seeds becomes common good or open source. There are various crops varieties whose patent period has expired and they are still popular with farmers. However there has not been precedence in having other enterprises other than breeders 'owners' exploiting them for commercial gains. For example there are 3 varieties of cassava, 12 varieties of potatoes, 11 varieties of maize, 6 varieties sorghum and 16 varieties of beans to mention but a few that their protection has expired. Registered owners have continued to enjoy exclusive rights even when they became open source on expiry of protection period. This is also an open opportunity for small seed enterprise to join the leagues initially designed for big players as the initial stages of OSSS in Kenya.

4.5 Crops Act 2013

Some crops are allowed to trade as seed without registration and certification. The Act provides a list of scheduled crops and gives options on certification as those under a breeding program under with two specific categories;

- a) Compulsory Certification
- b) Voluntary certification

The act also clearly stipulates crops that are not under any breeding program. The following food crops fall under voluntary certification cassava, sweet potato, groundnut, pigeon pea, cow pea and chick pea. Their registrations as required by Kenya Plant Health Inspectorate Service provide an opportunity for commercialization by farmers as OSSS local seeds. These crops can be tested against the DUS (Distinctiveness, Uniformity and Stability) and the seeds declared as Open Source.

Food Crop with no breeding program include broad beans, pea, amaranth, kale, coriander, pepper, pumpkin/squash/courgette, tomato, water melon, black nightshade and spider plant provides another opportunity for Open Source Seed Systems. All these crops under voluntary and no breeding programs can be included in OSSS.

5.0 Conclusion

The findings of this paper conclude that all the 3 seed systems can coexist in Kenya i.e. OSSS, Farmers managed seed systems and the IPRs based seed trade. It is thus a high time Kenya recognizes the importance and the contribution of OSSS to the Seed sector. Part of our major findings is that there are huge opportunities for OSSS to operate in Kenya under the existing legal framework. There is also an ambiguity in the existing seed laws and policies hence need for interpretations through a judicial process. The concept of OSSS has emerged in order to offer counterbalance to the intellectual property rights system, and to ensure that barriers are not created against the farmers' use and development of plant genetic resources. OSSS is also an opportunity for improvement of agro biodiversity through participation of more players in the seed market. This` paper also concludes that one of the biggest challenges to OSSS in Kenya is the lack of information about the whole concept. Other major challenges are lack of funding for small seed enterprises and the unfavorable legal environment.

6.0 Summary of Recommendations

In order to ensure that OSSS contribute to food security in Kenya as well as promote agro biodiversity, the following recommendations should be implemented.

- 1) There should be change in law and policies to create and promote or recognize the OSSS.
- 2) A judicial process should be put in place to get clear interpretation of the law and regulations and address the ambiguity created by conflicting provisions in the seed laws.
- 3) Effort should be made to support registration of farmer's varieties through various institution to be declared OSSS. Varieties registered by public institution should also carry the OSSS pledge.
- 4) We recommend that micro seed enterprises should be facilitated to access capital to invest in OSSS seed trade.
- 5) There should be efforts to create awareness on benefits of OSSS amongst all the stakeholders and like-minded organizations.

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