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Seed Security in Uganda: Current status, issues and challenges

S. Kiwanuka and J. Kintu
Food Rights Alliance, Kampala, Uganda

Abstract

It has been observed that for most crops in Uganda, yields are less than a third of their potential. Despite the strong promotion campaigns for new varieties by many national and multinational seed companies, farmers are still producing and exchanging seed informally. Among them are farmers who cannot afford the cost of seed coming out of the formal system and those whose needs are not fully addressed by the seeds available on the formal market. Of late, introduction of genetic engineering in the development of new seed varieties has also raised more concerns to smallholder farmers in developing countries, as well as consumers and environmentalists. This report examines the key elements of seed security in Uganda and how to improve agricultural productivity for farmers to achieve food sufficiency. The study specifically aimed at investigating the formal and informal seed security initiatives and how they relate to current policies and laws. The study was mainly qualitative in nature and used participatory research assessment tools while collecting data from the field in addition to literature review. It covered four districts representing the key agro-ecological regions in the country, i.e. Soroti, Wakiso, Masindi and Kasese. The findings show that majority of the farmers in Uganda depend on informal seed systems like farm saved seeds and seed exchange. This seed exchange involves transfer of indigenous and community knowledge and practices, which are often, accompanied by information about how best to plant, nurture and harvest seed. This practice has also been a cornerstone of agro biodiversity and food security for a long time. The role of the government in seed supply has been diminishing overtime due to recent policy reforms, which aim at supporting the private sector to take up a dominant role. Uganda does not have a comprehensive seed security policy, while most of the legal guidelines on seed are outdated or being developed. There is still need for the government to increase public investment especially for seed research and distribution and not entirely rely on the private sector. The current private sector is still undeveloped to serve interests of different groups of farmers especially the poor. It is recommended that more effort be directed towards the development of community seed banks as well as putting in place seed fairs and farmer exchange visits in order to preserve germplasm and for future seed improvement.

Key words: Certified seed, improved seed, improved varieties, 1ocal varieties, seed

Introduction

Seed security can be defined as a situation where farmers are certain, year after year, to obtain on time the quantity and quality of seed necessary to fulfill their production plans (PELUM, 1998). Seed security has two important attributes, namely the availability of and access to quality seed. Emphasis is also placed on the timing (that is availability of seed at planting), the finance (the ability to acquire or purchase), and equity (access to available seed for all farmers in the community).

Seed is crucial to food security, hence household nutrition. For example, for households to have an adequate diet, they should be able to have a variety of seeds, which allow them to produce different types of crops. The availability of seed, supported by other inputs and services are important for increased crop yields and agricultural production and in most cases guarantee household food security. A good seed supply system ensures farmers' or household's sustained ability to have sufficient qualities of the desired types of seed at the right time.

Majority of Uganda's population (80%) are smallholder farmers who live in the rural areas. They have practiced farming for centuries, and developed an intimate relationship with their farming environment knowing what to plant and when. They have also consciously and unconsciously accumulated a number of crop landraces through domestication, selection and improvement. Diverse crop plants and varieties are characterized by their farming systems which is meant to address different, ecological, social, cultural and economic needs.

The agricultural sector in Uganda accounts for about 90 percent of exports and 80 percent of the employed household population. The sector provides most of the raw materials to mainly agro-based industries especially those involved coffee hulling, cotton ginning, tea processing, sugar production, textile mills, soap industries, edible oil industries, cigarette manufacturing, grain milling, meat processing, dairy

and leather products manufacturing (MFPED, 2002). It is characterized as predominantly semi-subsistence with low input and low productivity. There are about 3 million smallholder farm households of which 80 percent own less than 4 hectares of farm land and mainly use hand-hoe technology for cultivation. The main traditional cash crops grown are coffee, cotton, tobacco, tea and sugar cane - only tea and sugar are grown on large estates. Likewise the main food crops are maize, beans, cassava, Irish potatoes, sweet potatoes, groundnuts, bananas and finger millet. Food crop production dominates the agricultural sector and contributes 63.8 percent of agricultural GDP (MAAIF, 2002).

Agricultural production has been constrained by a number of factors such as low technology generation and transfer, limited land and inadequate human capacity and information sources (GOU, 2000). Other constraints to increased agricultural productivity have been identified as lack of good quality seed, low adoption rates of appropriate technologies, poor research, extension and farmer linkages. Specifically, inaccessibility and lack of good quality seed has resulted into increased incidences of food insecurity, poor nutritional standards and decreased household incomes.

Uganda has made several economic policy adjustments and reforms in various sectors including agriculture. These reforms aim at transforming subsistence agriculture into a more productive and income-generating sector for the population engaged in it. However, most of the reforms affect various groups of people differently. For example, farmers who derive their livelihoods and community stability from agriculture could be affected differently from the private players if these reforms in the sector do not target specific groups differently.

As part of implementing policy reforms, government has put in place the Plan for Modernization of Agriculture (PMA) to transform the current rural and subsistence agriculture systems into modern agriculture through increased productivity. Within this framework the private sector is expected to play a dominant role in agriculture including key areas like the seed sector. This study therefore aims at understanding the nature of current seed systems in Uganda and how existing policies and laws could affect them. As mentioned above, various studies and practices have emphasized that food security is highly linked to seed security and much of the knowledge and experiences of seed security is mainly held by farmers. The analysis of findings leading to this linkage in this case, will deepen our understanding of farmer's knowledge and practices on seed systems and their food security concerns.

It has been observed that for most crops in Uganda, yields are less than a third of their potential. This is a result of complex causes, principal among them being the dominant use of poor quality seed varieties, and lack of knowledge and facilities on how to save, preserve and store good seed - whether improved or traditional. It is obvious that seed security is crucial if the country is to be self-sustainable in food production and this report therefore tries to find out how key elements of seed security can improve productivity for farmers to achieve food sufficiency. At the moment we believe that food security should be built and maintained on the foundation of community seed systems until there is full transformation of rural population and less people are involved in the agricultural sector.

The specific objectives of the study were therefore to Investigate formal and informal seed security initiatives and how they relate to current policies and laws and analyze current government policies and legislation related to seed - both traditional and commercial- in accordance to farmers' needs and priorities. Recommendations were drawn up to facilitate policy and law making processes in the seed sector with emphasis on farmers' priorities and to provide alternatives for appropriate farmer and community seed initiatives in accordance with farmers' information, experiences and practices.

Methodology

The study was mainly qualitative in nature and used participatory research assessment tools while collecting data from the field in addition to literature review. It covered four districts representing the key agro-ecological regions in the country and a wide range of relevant literature. Data collection from the field was based on different checklists designed according to the target group, the kind of information needed or category of key informants. The study targeted key players in the seed sector like farmers, traders and government officials responsible for agricultural and seed related activities. Information was collected on the role and contribution of these players to the seed sector and how they relate to the existing policies and laws. More information related to the legal and policy supportive framework on seeds was collected as well. Sampling was purposive to reflect different agro-ecological zones but with much emphasis on the Bwamba/Rwenzori, Teso, Bunyoro and Buganda/Central farming systems. The study was therefore conducted in four districts, which included Soroti (Teso Region), Masindi (Bunyoro and North-West Region), Kasese (Bwamba/ Rwenzori), and Wakiso (Central Region).

Results and discussion

Current issues

The advent of modern agriculture has resulted into commercial crop improvement, commercial seed production and marketing, intellectual property protection regimes for new varieties, laws governing seed production and marketing, introduction of monoculture, massive loss of local landraces and the knowledge associated with them and the introduction of environmentally unfriendly technologies.

Current food production costs have escalated beyond reach for most small-scale farmers in Uganda. The available seed on the market is inappropriate for certain areas and requires high level of management and technology for food yields. As a result farmers recycle seed from previous seasons, which leads to a further drop in yields. Also the diversity of life

that is essential for our survival is quickly eroding. For example it is estimated that the world is loosing 2% of crop genetic diversity every year (RAFI, 1998). This is because fewer locally adopted varieties are available. This loss of diversity has had very negative effects on household food security. The outbreak of just one disease could threaten the survival of communities due to the genetic similarities of the planting materials.

The entry of the private sector into crop improvement culminated into the development and enforcement of laws regulating access to improved planting material and the production and marketing of seeds. The laws are in the form of patents, plant breeders' rights and seed acts. Most of these laws suppress the informal seed system although they have stimulated formal seed production and marketing. The grant of patents and Plant Breeders Rights implies that farmers will have limited access to improved material. To access seed, poor farmers have to pay money to compensate the breeder for his/her effort in improving the material. No compensation is given to the farming communities for their efforts over centuries in improving, adopting and conserving the landraces, which the plant breeders use to develop new varieties.

Currently there is no seed law in the country that promotes production and marketing of farmer landraces. Landraces are in most cases not distinct, uniform and stable, and yet these are characteristics needed in seed certification. Some technical specification like isolation distance are made in such a rigid way that smallholder farmers are disadvantaged because of the sizes of their land holdings. The laws mainly serve the interest of the private seed companies or the formal seed system procedures. They fail to recognize the role the informal seed system plays or can play in the provision of seed to the smallholder farming sector. They also fail to address the difficulties smallholder farmers are facing in the production and marketing of seed.

The formal seed system would like to promote wide use of one or a few varieties to maximise returns on investment used to develop the varieties. On the other hand farmers are looking for varieties that occupy certain niches in their agro-ecosystems and life styles. It is impossible for such farmers' needs to be met by one or a few varieties. Moreover, most of the strategically important crops that smallholder farmers grow do not yield reasonable economic returns to attract private sector investment in breeding seed production and marketing.

Despite the strong promotion campaigns for new varieties by many national and multinational seed companies, farmers are still producing and exchanging seed informally. Among them are farmers who cannot afford the cost of seed coming out of the formal system and those whose needs are not fully addressed by the seeds available on the formal market. Of late, introduction of genetic engineering in the development of new seed varieties has also raised more concerns to smallholder farmers in developing countries, as well as consumers and environmentalists.

Genetic engineering is a relatively new science with yet as many untested impacts on biodiversity, bio-safety, economic and social welfare and food security. Transnational corporations are taking advantage of poor controls in developing countries to introduce genetically engineered plants into these countries. The mass production of planting material using modern biotechnological techniques can cause severe loss of agro-biodiversity through replacement with a few uniform varieties. Biotechnology refers to a variety of techniques that involve the use and manipulation of living organisms to make commercial products. These techniques include cell culture, tissue culture, embryo transfer and recombinant DNA technology (genetic engineering). Agro-biodiversity and genetic resources can also be put at a risk by genetic engineering technologies such as the terminator technology that causes sterility.

Seed Production

Seed preservation/Storage

Most farmers currently use farm saved seed, which are based on the local knowledge and practices. Most small farmers do not depend on the market for efficient supplies but on community or farmer seed system. An exception case is for vegetable seeds, which were reported difficult to produce and good quality maize (hybrid) that farmers resort to purchasing from stockists in the nearby trading centres or towns. Uganda Coffee Development Authority provides free clonal coffee seedlings while other seeds are purchased from seed companies. Farmers reported that in the process of producing their own seeds they face a number of problems, which include; low yield, lack of technical knowledge and skills on seed production and maintenance. Some varieties have low resistance to pests and diseases like insects and rodents. Most farmers lack good storage facilities and knowledge because they are poor which leads to loss of seed viability. Well-organized community seed schemes were almost non- existent in the districts covered.

Seed marketing

There have been an increasing number of commercial players in the Seed Industry from the time it was liberalized in early 90s. Some of these include; FICA Limited (Farm Input Care Centre) – which is the main player- with offices in Kampala, Kasese, and Masindi while in other districts it works with stockists as its seeds distribution agents. Other key private players are Nalweyo Seed Company (NASECO) based in Kibaale District, Farm Harvest Seeds based in Kampala, OTIS United based in Lira, Uganda Oil Seed producers and Processors Association (UOSPA), General and Allied Ltd based in Kampala, Kabale Seed Potato Producers Association (KSPP) based in Kabale, Agrotech based in Kampala, Kenya Seed Company (KSCO) based in Kampala and Mbale, and the East African Seed Company (EASCO) based in Kampala. These seed companies have come together under the Uganda Seed Traders Association (USTA), and are also affiliated to

African Seed Trade Association (AFSTA) a member of the Federation of International Seed Federation (ISF).

Private companies have been much involved in seed multiplication especially in Maize composites and Maize Hybrids, Beans (Bush type and climbing type), Groundnuts, Soya bean, Sunflower, Finger millet, Rice, Sorghum, Simsim, Pigeon peas, Cassava, Sweet potatoes, Irish Potatoes and Bananas. They have also developed seed distribution networks consisting of regional seed distributors countrywide and in turn the distributors have a network of Agro-stockists. Some farmer groups in Wakiso district were also found to be engaged in seed multiplication for own supply and commercial purposes.

Institutional Framework for Seed Production and Distribution

Policy and Legal Framework

Currently, the most recognized law in Uganda is the Agricultural Seeds and Plant Statute No. 10 of 1994. However, other seed related bills like the Plant Varieties Protection Bill and Biosafety Regulation are being drafted by the Law Reform Commission and will soon be submitted to cabinet for approval. Ministry of Justice has also gone ahead to propose some amendments to the Seed Act, 1994 in order to address all types seeds and plants. In its current form, the seed Act, 1994 aims at providing for the promotion, regulation, and control of breeding and variety release, multiplication, marketing, coordination, importation and quality assurance of seed and other planting materials. However, it does not provide for protection and promotion of traditional seed varieties and practices. On the other hand, the Plant Varieties Protection Bill under the guidance of the OAU model law recognizes traditional knowledge and practices for local and indigenous communities and thus provides the only framework for protection of this knowledge and practices.

Uganda is a signatory to international undertakings like Convention on Biodiversity (CBD). The agreement is premised on the concept of sovereign rights of states to utilize their own resources in accordance to their own environment policies. The convention framework also provides for states the right over their plant genetic resources, which includes their protection and promotion. A supplementary agreement to the Convention on Biodiversity in relation to seed security and biodiversity is the Cartagena protocol on biosafety, which was adopted on 29 January 2000 by 130 countries, including Uganda. The main objective of the Cartegana Protocol is to contribute to the safe transfer, handling and use of living modified organisms (LMOs) including seeds development through genetic engineering that may have adverse effects on the sustainable use of biological diversity, taking into account risks to human health and specifically focusing on trans-boundary movements. The Protocol came into force on 11 September 2003 which implies that it has become legally binding in the international legal system and in the National legal systems of countries that have given consent to be bound by it. Uganda is therefore required to comply with the protocol and implement the provisions therein. Currently, the Uganda National Council of Science and Technology (UNCST) is developing a national biosafety regulation, which is expected to incorporate the main principles and guidelines specified in the Cartagena protocol.

The International Treaty on Plant Genetic Resources aims to conserve and sustainably use the genetic resources of all the world's food crops. Its implementation is through a multilateral system (as opposed the existing CBD Bilateral system of access) to a list of some of the most important food and fodder crops essential for food security and interdependency, for those countries that ratify the treaty. It will ensure that benefits from the commercial use of the genetic resources of these crops are returned to farmers in developing countries, the original source of most of the resources. To ensure sustained access to seed in Uganda, there is a need for policies which favour continued availability of plant genetic resources and conservation of genetic diversity essential for food and agriculture. The National policies like the seed policy must recognize farmers' and community rights, which include the protection of traditional knowledge, participation in the national decision-making processes about genetic resources and sharing benefits from the commercial use of these genetic resources.

Conclusions and Recommendations

Most farmers currently use farm saved seed, which are based on the local knowledge and practices. At the moment Uganda does not have an explicit seed policy to guide the seed sector yet government is encouraging other players especially from the private sector to take up more roles in the sector. The regulatory nature on the seed sector is not well defined and such a vacuum is likely to suffocate recognition of the critical role of the informal seed sector and the needed protection and support by government.

There is need for government to supplement efforts of the private sector so that seed security needs for all categories of farmers are met. In addition to supporting the informal seed sector, there is need to improve marketing and distribution systems for seeds in order to increase access at lower levels. The current market-led seed security approach in the Plan for Modernisation of Agriculture needs to be refocused. The PMA strategy needs to build upon farmers' knowledge and practices as the agriculture sector is progressively modernised.

The role and services of public institutions to small farmers is diminishing and this has started to show some negative effects like less access to seed and support information.

Government should not relinquish its main role in public research wholly to the private sector at the moment. There is need for more financial and human resource investment in public research institutions in order to cater for increasing demand for seed and related services by majority of poor farmers. Move to privatise public agricultural extension

services is likely to affect seed and food security systems of many small farmers. The role of private provision of agricultural advisory service as specified under NAADs should be systematically rolled out. Privatisation of extension services needs to be pegged to improvements in the incomes of the farmers and on performance of the private sector in terms of meeting the seed demand of all categories of farmers. Results from the field study and supplementary information review on seed, show that Uganda's seed industry has to be given a lot of priority if the country is to meet its food security needs at all levels.

The Convention on Biodiversity provides an opportunity to Uganda in enhancing appropriate seed security as well as protecting farmers' rights, biodiversity and benefit sharing systems from the use of its genetic resources. It is necessary to have appropriate policies and laws in place which are compliant with the CBD provisions. The study results indicate that most of the farmers have a strong hold to Uganda's biodiversity through their current seed security systems and crop variety management. It is important that government recognizes and supports the informal seed security systems in the interest of preventing biodiversity loss. Government should therefore support structured systems at the sub-county level to ensure that farmers access quality seeds in a timely manner. Farmers interviewed also indicated that government should support community seed banks, which can be managed by farmers themselves.

There is an urgent need to have a comprehensive national seed policy to guide the seed sector and other related practices through appropriate laws and regulation. This policy should take into consideration the following key proposals, which are generated as gaps or concerns identified by respondents. It is important to recognise that Uganda is still at its lowest levels of development and therefore expecting too much to be delivered by a small and young private sector is likely not to help majority of the poor farmers to access private seeds. Government still needs to retain much of the responsibility in the seed sector especially for some strategic crops, which are key to food security in all parts of the country. The policy should ensure that there are increased resources to key public institutions especially for seed research in order to meet the required levels of investment, which at the moment is not likely to be filled up by private sector. The policy should recognise the importance of farmers' rights to save, use, exchange, share or sell their farm seeds and planting materials without any restriction. In addition, it should protect and promote indigenous and community knowledge on seed in order to guarantee food security especially for small farmers.

There is need to create a national seed grid – preferably computerised- as a database for providing information on availability of different varieties and monitoring of information required on seed, its production, distribution and preferences of farmers at all levels. The policy should put into place mechanisms of public participatory research processes aimed at improving indigenous plant varieties and local land races. The Seed policy should recognise no patents on genetic resources for food production and other related policy and legal instruments as well. There is need to apply precautionary measures as government introduces Genetically Modified Organisms (GMOs) in the country. Biosafety regulation should be put in place and a five year moratorium granted to allow the country put in place all the relevant and well functioning systems.

Food Rights Alliance members and other civil society organizations need to embark on a key advocacy strategy to influence the formulation of the seed policy as well. However, it is important for them to target other related policies and legal processes like the current drafting of the biotechnology policy, biosafety regulation, food and nutrition security policy, PMA reviews among others, which are very important and likely to affect seed security.

Given the information from the field study the research team proposes the following activities, which could be done for the communities and farmers in order to improve their seed security systems; Communities should be supported to set up seed banks for storage of harvested seed in order to increase seed availability at the time planting time. As emphasized by the farmers, this support could be in form of providing technical knowledge on seed saving and storage, materials like cement to construct seed stores, giving farmers chemicals for seed preservation among others. Periodic/ regular seed fairs can be organised where farmers are allowed to share information both indigenous and modern about seed saving and other related seed practices. In order to allow innovations and free sharing of information, the seed fairs could put in place a small fund for best performers according to a criteria, which is supported by the farmers themselves. The seed fairs should be close to the communities but exchange of farmers between different areas should be encouraged as well to share information from communities, which are mainly similar.

There is need to establish revolving seed schemes where these are sustainable and it should utilise the existing farmers' groups as an entry point. The study did not identify well-organised community seed security schemes in the areas it covered but this does not mean they do not exist in the entire country. It is therefore important to continue the search for them in order to understand how they operate and whether they can be replicated in other parts of the country. Other experiences could also be borrowed from members of the African Biodiversity Network.

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