



INVESTING IN ORPHAN CROPS TO IMPROVE FOOD AND LIVELIHOOD SECURITY OF UGANDA'S RURAL POOR

Policy Gaps, Opportunities and Recommendations



Ronald Naluwairo

ACODE Policy Research Series No. 43, 2011

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List of Abbreviations

ACODE	Advocates Coalition for Development and Environment
FAO	Food and Agriculture Organisation
IDRC	International Development Research Centre
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
NARO	National Agricultural Research Organisation
NBBP	National Biotechnology and Biosafety Policy
NEMP	National Environment Management Policy for Uganda
PGRFA	Plant Genetic Resources for Food and Agriculture
PMA	Plan for Modernisation of Agriculture
UFNP	Uganda Food and Nutrition Policy

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Executive Summary

This policy research paper is an analysis of the extent to which Uganda's food and agricultural-related policies and policy frameworks support the production and wider use of orphan crops in national development. Its major objective is to provide policy recommendations that can be adopted to support the production, conservation and wider use of orphan crops for enhanced food and livelihood security, particularly of Uganda's rural poor.

It has been established that although Uganda's food and agricultural-related policies and policy frameworks provide some opportunities for the production and use of orphan crops, majority of them do not generally support and favour these crops. From agricultural research, production and extension to agricultural marketing and the country's approach to food security, Uganda's policy architecture is skewed towards promoting the "major" crops at the expense of the rural poor peoples' crops - the orphan crops. This is regrettable because many households in Uganda, particularly in the rural areas where most of the population is concentrated depend on these crops not only to meet their food and nutritional needs, but also for income and general livelihood security. It is therefore important to improve Uganda's food and agricultural-related policies to ensure that they also adequately promote orphan crops for enhanced food and livelihood security of Ugandans, especially the rural people.

The key policy recommendations suggested to promote and support the production, conservation and increased use of orphan crops include: establishing an adequately funded special programme by NARO to focus on scientific research and innovation for improving Uganda's orphan crops; strengthening the seed system for orphan crops, mainstreaming orphan crops in the country's zonal agricultural production, agro-processing and marketing plan; and including orphan crops in the national export strategy. Other recommendations made include: investing in the preservation and protection of traditional knowledge associated with orphan crops; maintaining and improving the public extension system to serve the rural poor; and expediting the adoption and implementation process of the Draft National Policy on Plant Genetic Resources for Food and Agriculture.

1. Introduction and Context

Despite being endowed with a variety of crops and crop species, the majority of which are important for food and agriculture, Uganda's food and nutrition security situation remains worrying. The United Nations Food and Agriculture Organisation (FAO) has already warned of a looming food and nutrition crisis in Uganda. According to FAO, Uganda could be the next country (after Somalia, Kenya, Ethiopia and Djibouti) "to be hit by the same sort of alarming malnutrition and drought conditions."¹ This warning comes at a time when increasingly, there are so many cases of malnutrition and malnutrition-related diseases and deaths being reported in the media.² This is very sad but perhaps not surprising. According to a 2010 study, the proportion of Ugandans unable to access adequate calories has generally been increasing.³ The study points out that 38 per cent of children under 5 years suffer from chronic malnutrition, 16 per cent suffer from underweight and 6 per cent suffer from acute malnutrition.⁴ It concludes, inter alia, that food insecurity and the double burden of malnutrition (where under-nutrition co-exists with over-nutrition) are on the increase and that income and wealth disparities are also increasing.⁵ It is instructive to note that majority of the food insecure, hungry, poor and vulnerable Ugandans live in rural areas and depend on agriculture for food, income and livelihood security.

Part of the problem is that government, the private sector and development partners often focus their efforts in the fight against food insecurity and hunger on a few major crops that are considered important for food security. They often ignore or give very little attention to orphan crops such as mushrooms, yams, indigenous fruits and vegetables,⁶ yet millions of Ugandans in the rural marginal areas rely on these crops for their sustenance and livelihood security. If given the necessary policy attention, these crops have great potential not only to improve the food and nutrition security of the people in rural areas but also to provide and improve income opportunities for the most vulnerable in these areas, particularly the women and the youth.

It is from the above context that this paper sets out to examine Uganda's agriculture and food security-related policies and policy frameworks with the aim of providing recommendations that can be adopted to scale up the production and use of orphan crops in Uganda. The paper has three specific objectives. First, it aims to identify policy gaps with respect to the conservation,

¹See Nebehay S, Uganda could be next hit by malnutrition, warns UN, *Reuters* August 3, 2011.

²See for instance, The Observer, DEATH, HUNGER IN NAMUTUMBA: 15 children have died of kwashiorkor in one month, *The Observer*, July 25-27, 2011.

³FANTA 2 (2010), *The Analysis of the Nutrition Situation in Uganda*, Food and Nutrition Technical Assistance II Project (FANTA 2), Washington DC.

⁴Ibid.

⁵Ibid.

⁶For a list of some of Uganda's orphan crops, see the annex to this paper.

production and utilization of orphan crops in Uganda. Second, it aims to identify the existing policy opportunities for promoting orphan crops in Uganda's development. Finally, the paper provides policy recommendations that can be taken on to support the production and wider use of orphan crops in improving food and income security in Uganda.

The paper is largely based on a desk review of the relevant policy frameworks and other materials connected thereto. It is divided into six sections. Section 1 is the introduction which also provides the general context in which this paper is written. Section 2 explores the meaning of orphan crops and the importance of these crops in national development. Section 3 identifies the policy gaps in regard to promoting orphan crops in Uganda. Section 4 identifies the major existing policy opportunities for promoting orphan crops in Uganda and in section 5, policy recommendations for promoting orphan crops are suggested. Finally, section 6 is the conclusion of the paper.

2. The Role of Orphan Crops in National Development

Orphan crops can generally be described as those crops or species which have great prospective for food production and development, but whose potential is not adequately appreciated and fully exploited. Orphan crops are also often interchangeably described as “minor crops”, “neglected species”, “underutilized species”, “underdeveloped species” or “under exploited species”.⁷ They are described as “minor” to denote the fact that they have a small commercial value of production and trade compared to the major crops/species.⁸ “Neglected” connotes the fact that compared to the major crops, orphan crops receive very little research and development attention.⁹ As such, majority of them are inadequately characterised and generally have very little scientific information known about them. Consequently, these crops remain “underutilized” in national development.

A key point to emphasise about orphan crops is that they vary from one locality to another.¹⁰ What may be an orphan crop in Uganda may be a major crop in Kenya and Rwanda. Even within a particular country, orphan crops may vary from region to region, although a number of crops may cut across regions.

Common Features for Orphan Crops

- Represent an enormous wealth of agro-biodiversity.
- Have great potential for contributing to improved incomes, food security and nutrition, and for combating the ‘hidden hunger’ caused by micronutrient (vitamin and mineral) deficiencies.
- Are strongly linked to the cultural heritage of their places of origin.
- Are mainly local and traditional crops (with their ecotypes and landraces) or wild species whose distribution, biology, cultivation and uses are poorly documented.
- Tend to be adapted to specific agro-ecological niches and marginal lands.
- Have weak or no formal seed supply systems.
- Are recognized to have traditional uses in localized areas.
- Are collected from the wild or produced in traditional production systems with little or no external inputs.
- Receive little attention from research, extension services, farmers, policy and decision makers, donors, technology providers and consumers.
- May be highly nutritious and/or have medicinal properties or other multiple uses.

Source: Crops for the Future

⁷Guere, G., et. al (2006), *Marketing Underutilised Plant Species for the Benefit of the Poor: A Conceptual Framework*, International Food Policy Research Institute, Washington, p.1.

⁸Ibid.

⁹Ibid.

¹⁰Chishakwe, N., (2008), *The role of policy in the conservation and extended use of underutilised plant species: a cross-national policy analysis*, Global Facilitation Unit for Underutilized Species, Rome and the Genetic Resources Policy Initiative, Nairobi, p.2.

Why then should orphan crops be promoted? Of what importance are they to national development? Five major reasons can be given to justify the need for Uganda to promote the production and utilisation of orphan crops. First, majority of these crops and their species are often grown by the poor farmers and communities in marginal and fragile environments such as dry lands and swamps which do not favour the growing and production of the more popularly utilized crops. Most orphan crops are resilient to environmental extremes and harsh weather conditions. To many farmers living in marginal areas, orphan crops are therefore not “minor crops”. They are the very basis of their farming systems and constitute an integral part of their livelihoods and food security. Given the current challenge of climatic change and its effects on food and agricultural production, promoting orphan crops is therefore an important policy option for ensuring food and livelihood security for the poor rural masses living in marginal areas.

Second, there is increasing evidence that many orphan crops are very nutritious and provide many nutrients and other health benefits that often exceed those of the common crops.¹¹ Promoting the production and wider utilisation of these crops should therefore be key in Government efforts to fight malnutrition and malnutrition-related diseases and deaths which, as pointed out in the preceding section, are very prevalent in Uganda. Third, unlike major crops, orphan crops require low inputs like pesticides and fertilizers. In fact, many orphan crops are also resilient to pests and diseases. This means that orphan crops are affordable and sustainable to produce by the rural poor farmers. This is critical given the vicious circle of poverty that majority of Uganda's farmers are engulfed in.

Fourth, orphan crops are an important source of income and empowerment, particularly for the women who are the main growers of these crops. There is evidence that a high proportion of Uganda's orphan crops reach the market, especially in the geographical areas where they are grown.¹² Given that agriculture is the major source of income for people living in the rural areas and considering the fact that most orphan crops are grown by women, this means that these crops are a very important source of income and empowerment for the vulnerable women. Promoting orphan crops can therefore be an important policy approach in the poverty eradication and women empowerment agendas.

Over and above the afore-mentioned benefits, orphan crops are very important not only in the maintenance of agricultural biodiversity, but also in maintaining

¹¹ See <http://www.new-ag.info/en/en/focus/focusItem.php?a=1286> [Accessed on 2nd August 2011].

¹² Wasswa, M., et. al (2008), “Neglected food crops in Africa- A case study from Uganda,” Proceedings of the Uganda National Academy of Sciences, Kampala.

agro-ecosystems which is critical for the long-term sustainability of food and agricultural production. The continued general decline and erosion of orphan crops/species in Uganda (mainly as a result of neglect) could erode the genetic base and prevent the use of distinctive useful traits in crop adaptation and improvement. This would be suicidal especially given Uganda's high population growth which increasingly requires more food to feed and income generating activities for their general survival, not to mention the challenge of climate change which could render the production of today's major crops unsustainable. It is therefore critical that orphan crops are promoted as one major way of maintaining and conserving agricultural biodiversity for the present and future generations.

3. Policy Gaps in Promoting Orphan Crops in Uganda

Although Uganda's agricultural and food security-related policies undeniably provide some support to the production, conservation and use of orphan crops in national development, most of them are generally not supportive. From agricultural research, production, and extension, to agricultural marketing and the country's approach to food security, Uganda's policy architecture is generally not supportive of the role of orphan crops in national development. This section highlights the gaps in Uganda's agricultural and food security related policies in as far as the production, conservation and use of orphan crops is concerned.

Starting with agricultural production and marketing for instance, since 2004, Uganda has been pursuing a zonal agricultural production, agro-processing and marketing policy where the country is divided into ten zones of production excellence.¹³ Among other factors, the zones were mapped out using climatic differences, socio-economic characteristics, and the need to have sufficient acreage under production for selected high value enterprises. The enterprises for the respective zones were selected based on factors such as availability and accessibility of regional and international markets for the products; competitiveness of the products and Uganda's comparative advantage; profitability of the product; potential of the zone to produce targeted products on a sustainable basis; and constraints to production, processing and marketing.

¹³The Republic of Uganda (2004), Increasing Incomes through Exports: A Plan for Zonal Agricultural Production, Agro-processing and Marketing.

The over-concentration of the zonal agricultural production, agro-processing and marketing policy on “high value” and “competitive enterprises” with regional and international markets has the negative effect of inhibiting the production, marketing and use of orphan crops in national development. For a variety of reasons, orphan crops are generally not competitive and do not meet the quality standards for the regional and international markets. In many places where these crops are grown, they cannot also be produced on large scale and on a sustainable basis. It is therefore not surprising that there is hardly any orphan crop on the list of enterprises that were chosen for the different zones of production excellence. It is therefore tenable to conclude that despite its advantages in promoting the production, marketing and use of major crops, Uganda’s zonal agricultural production, agro-processing and marketing policy is generally not supportive of orphan crops. In fact, as the major thrust of this policy is to promote production of marketable products on large scale, it is arguable that it could have the undesirable effect of displacing and replacing orphan crops in the different agricultural zones with those crops considered “high-value” and competitive.

Related to the agricultural zoning, agro-processing and marketing policy, in the next five years (i.e. 2010/11-2014/15), the Government of Uganda will be pursuing a commodity-focussed approach to support value chains of what are considered to be strategic enterprises.¹⁴ It is apparent that this policy initiative focuses only on major crops. The strategic commodities to be supported are coffee, tea, maize, beans, cassava, bananas, fish, cattle, beef and poultry.¹⁵ Among the factors that guided the selection of these commodities include: returns on investment (profitability), the zoning criteria, contribution to exports and poverty reducing effect.¹⁶ Coffee, tea, cassava, maize and bananas are the major traditional crops that have always received and continue to receive government support. Although it is stated that in addition to these specific enterprises, Government will continue to promote the production, marketing and value addition of other commodities through programmes such as advisory services, research and regulatory services, it is evident that Uganda’s policies in these areas still do not generally favour the production and wider use of orphan crops.

Uganda’s export strategy does not also promote the use of orphan crops in national development. Although it provides for diversifying Uganda’s exports to include a wide range of products,¹⁷ for agricultural exports, it mainly concentrates on the traditional major crops that already have demand

¹⁴Republic of Uganda (2010), Agriculture Sector Development Strategy and Investment Plan 2010/11-2014-15, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, p.76.

¹⁵Ibid.

¹⁶Ibid.

¹⁷ Republic of Uganda (2008), The Uganda National Export Strategy 2008-2012, Ministry of Trade, Tourism and Industry, Kampala.

in the international market. The strategy's first six major priority enterprises are coffee, tea, flowers, fish, cotton and services. This means that it is mainly these enterprises which receive trade and other support services like market information, trade finance, competence development, trade promotion and quality management. The strategy has no provisions to stimulate international demand for the country's orphan crops and their products. Although the strategy's next six priority enterprises include fruits, vegetables, cereals and oil seeds, it is apparent that these (fruits, vegetables, cereals and oil seeds) are unlikely to be orphan crops. They are likely to be the known "major crops" with already established markets. This argument is reinforced by the criterion that was used in coming up with the priority enterprises. The four key factors that were considered are: possession or potential to possess a significant competitive advantage; potential to possess high-value addition; extent of contribution to national development; and high growth in international demand.¹⁸ Because of neglect in terms of research and other support services, most of Uganda's orphan crops do not generally meet these criteria.

With respect to agricultural research, Uganda's policy direction and vision is "A market-responsive, client-oriented and demand-driven national agricultural research system."¹⁹ Although this policy direction is expected to enhance the contribution of agricultural research to sustainable agricultural production and food security, it has great potential to undermine the development and use of orphan crops. Given that most of the orphan crops have little demand and are not marketable *per se*,²⁰ this policy direction has the effect of leaving out many of these crops and their species from the national agriculture research agenda. This is notwithstanding the fact that orphan crops are very critical in terms of food, nutrition and income security for many Ugandans especially those living in the rural marginal environments.

As is the case with the national agricultural research policy, Uganda's agricultural extension and advisory services policy is also market focused and demand-driven. It was designed to mainly promote the production and use of major crops considered to be marketable. Government policy in this area is "a decentralised, farmer-owned and private sector serviced advisory services."²¹ The major thrust of this policy direction is to promote market-oriented farming. It is meant to help farmers to manage their farms and farming enterprises as businesses.²² But what effect does this policy direction have in terms of

¹⁸Ibid, the executive summary and section 5.1.

¹⁹The Republic of Uganda (2003), The National Agricultural Research Policy, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe, section 2.2.

²⁰There are a number of reasons that explain why there is little demand and marketability of orphan crops. One of the major reasons is the ignorance of the value and importance of these crops not only in terms of their contribution to food and nutritional security but also their medicinal value and resilience to tough climatic conditions.

²¹The Republic of Uganda (2000), Plan for Modernization of Agriculture: Eradicating Poverty in Uganda (Government Strategy and Operational Framework), Ministry of Agriculture, Animal Industry and Fisheries, Entebbe and Ministry of Finance, Planning and Economic Development, Kampala, section 7.3, p.54.

²²Ibid, p.53.

promoting orphan crops for national development? The major objective of the private sector is profits. In fact not only profits but quick profits! The private sector therefore mainly targets competitive and profitable enterprises. Since most orphan crops are not competitive, they are unlikely to attract private investments in terms of extension and advisory services. A private sector-led agricultural extension and advisory services system is thus unlikely to serve the resource-poor farmers in marginal areas which negatively impacts on the production and utilization of orphan crops. Uganda's agricultural extension and advisory services policy is therefore also evidently not favourable to the increased production and use of orphan crops.

Regrettably, Uganda's food security policy approach is also not generally supportive of orphan crops. It encourages the production and use of major crops at the expense of orphan crops. According to the Plan for Modernisation of Agriculture (PMA), it is unequivocally stated that food security shall be guaranteed through the market and improved incomes rather than emphasising household self-sufficiency.²³ This policy direction is premised on the PMA's overall approach to agricultural development which emphasises that farming should be practiced and done as a business. The policy direction of ensuring food security through the market and the shift from subsistence farming to producing for the market has the negative effect of drawing Uganda's farmers away from producing orphan crops to producing major crops that are considered marketable.²⁴ This is especially so, for the reason that, as earlier stated, because of the lack of attention, the potential economic value of orphan crops is under-mined and not appreciated by the masses. This affects their marketability and market potential. It is therefore plausible to conclude that Uganda's food security policy approach also generally negatively affects the production and utilisation of orphan crops.

Regarding the policy shift from subsistence farming to producing for the market, it is important to stress that unless well managed, it can have disastrous effects on the food and nutritional security of the rural poor. Evidence from countries like India and Bolivia points to the fact that in transitioning from subsistence to commercial farming, many rural poor families do not get enough income to buy the necessary foodstuffs to replace the nutritional value of their hitherto grown traditional/orphan crops.²⁵ This leaves the food and nutritional status of those families at stake. The point to emphasise here is that while it is important for farmers to grow for the market, they should also be encouraged and supported to continue growing their various traditional and underutilised crops/species. It is only then that their food, nutrition and

²³Ibid, sections 4.3 and 4.5.

²⁴ It is important to emphasise in this respect that for a variety of reasons, many of Uganda's orphan crops are grown on subsistence basis.

²⁵<http://www.biodiversityinternational.org/fileadmin/biodiversityDocs/Announcements/COP10/Neglected%20and%20Underutilized%20Species.pdf>. [Accessed on 1 August 2011].

income security can be guaranteed.

Finally, because of the importance of seed for crop and agricultural production, this study would be incomplete without examining the impact of Uganda's seed policy on the production and use of orphan crops. One of the major constraints faced by Uganda's farmers growing orphan crops is the supply of enough and quality seed. Most of the seed for orphan crops is produced and supplied informally. With hardly any technical support, the farmers and their local communities select, save and store the needed seed. Seed supply is mainly through exchange and trade in local markets. With this kind of system, it is difficult to guarantee supply of enough and quality seed. The formal sector mainly concentrates on seeds of major crops. Unfortunately, Uganda does not have an explicit seed policy to address the above-mentioned challenges and guide the development of the seed industry. This in itself negatively affects the development of seed systems for orphan crops which resultantly affects their production. The marginalised nature of orphan crops requires special policy attention to ensure that farmers get adequate and quality seeds for their agricultural enterprises. The absence of a seed policy to do this is therefore a big policy gap as far as promoting the production and utilisation of orphan crops is concerned.

In absence of an explicit seed policy, Government position can be discerned from a number of actions, statements and existing legislation. From the perspective of Uganda's seed-related legislation, it is apparent that Government policy is generally not supportive of seed systems for orphan crops. The Seeds and Plants Act of 2006 which regulates the production and marketing of seed in Uganda for instance, provides that all seed offered for sale shall be properly labelled and sealed in accordance with certain specifications.²⁶ Such requirements are too arduous for the poor and ignorant rural farmers who are the people that mainly grow orphan crops. These requirements greatly undermine the development of seed systems for orphan crops as the rural poor farmers do not have the capacity to meet them. This calls for a seed policy and regulatory framework that would facilitate, rather than stifle the development of seed systems for orphan crops in Uganda.

In sum, there are major gaps in Uganda's food and agricultural-related policies in as far as supporting the production and utilisation of orphan crops is concerned. These gaps must be expeditiously addressed if the country is to maximally benefit from orphan crops especially in improving the food and livelihood security of the rural poor.

²⁶ See section 12.

4. Opportunities for Promoting Orphan Crops in Uganda

A close examination of some of Uganda's food and agricultural-related policies and policy frameworks reveals that there are some opportunities that can be harnessed to promote the production and use of orphan crops in national development. One such policy framework is the Uganda Food and Nutrition Policy (UFNP). Among the key objectives of the UFNP include: ensuring availability, accessibility and affordability of food in the quantities and qualities sufficient to satisfy the dietary needs of individuals sustainably; promoting good nutrition of all the population; and ensuring food and income security at all levels for improving the nutrition as well the socio-economic status of the population.²⁷ As one of the major ways of achieving its objectives, the UNFP framework aims to promote and diversify the production of food commodities to meet the nutritional needs of the households.²⁸ It is arguable that diversification of food commodities to meet the dietary and nutritional needs of households, particularly those living in the rural and marginal areas, necessarily requires supporting the production and use of orphan crops. The UNFP also specifically includes, as a major strategy for promoting and diversifying the production of food commodities, the need to design and implement sensitisation programmes *to popularise the production and use of under-exploited food crops to widen the food base*.²⁹ This is an important policy statement which can be used to engage Government to promote the production and use of orphan crops in national development.

The UFNP further places special emphasis on the need to improve and promote the nutritional status of the population. It expresses great concern about the widespread under-nutrition especially among children, adolescents, women in productive age, internally displaced persons and prisoners.³⁰ It highlights the major factors causing under-nutrition including inadequate dietary intake, food insecurity, lack of nutrition knowledge, poor weaning practices and low family earnings.³¹ The UFNP recognises that good nutrition is a pre-requisite for adequate growth and development, health, learning capacity, work performance and a good overall quality of life. From this perspective, the UFNP policy aims to: significantly reduce macro and micro-nutrient malnutrition; reduce under-nutrition among adolescents and women of reproductive age; to eliminate micro-nutrient deficiency disorders and prevent and control chronic nutrition-related non-communicable diseases.³² In this regard, it sets out to, among other things, promote the use of local produce in manufacturing appropriate weaning foods; and fortifying some commonly-

²⁷ Republic of Uganda (2003), The Uganda Food and Nutrition Policy, Ministry of Agriculture, Animal Industry and Fisheries, Entebbe and Ministry of Health, Kampala, section 2.2.2.

²⁸ Ibid, section 3.1.2 (i).

²⁹ Ibid, section 3.1.3 (iii). Emphasis added.

³⁰ Ibid, section 3.7.

³¹ Ibid.

³² Ibid, section 3.7.2.

used foods with recommended micro-nutrients. Achieving these objectives especially among Uganda's rural poor requires promoting diets based on traditional and orphan crops. Supporting the production and use of orphan crops is therefore an important policy option that can be used to achieve the above-mentioned policy objectives.

The other important policy framework that provides opportunity for the conservation, development and use of orphan crops is the National Biotechnology and Biosafety Policy (NBBP). The goal of this policy framework is to contribute to the national development goals of poverty eradication, improved healthcare, food security, industrialisation and protection of the environment through the safe application of biotechnology.³³ One of the major focus areas for this policy framework is the enhancement of the conservation and utilisation of biodiversity. Among the strategies for achieving this objective is the use of biotechnology to characterise indigenous plants so as to evaluate their economic potentials for biotechnology applications.³⁴ Since one of the major reasons that explains the underutilisation and non-competitiveness of orphan crops is the general lack of or inadequate scientific information about their potential value, the use of biotechnology to characterise these crops so as to evaluate their economic potential is a very important opportunity in promoting their production and use in national development.

Besides, the NBBP also offers great opportunity for the use of modern biotechnology techniques in the general improvement of orphan crops and in the conservation of their genetic resources.³⁵ As Naylor and colleagues rightly point out, the use of molecular and other techniques of modern biotechnology for analysis of genetic diversity and the structure of germplasm can lead to better conservation of the crop genetic diversity, more efficient selection of accessions for phenotypic characterisation, and the identification of useful variants for conventional plant breeding.³⁶ From this perspective, the NBBP therefore presents enormous opportunity for the conservation and sustainable use of genetic resources of orphan crops.

The National Environment Management Policy for Uganda (NEMP)³⁷ equally provides important opportunities for promoting orphan crops in national development. Among other objectives, the NEMP aims to ensure the conservation and sustainable management of Uganda's biological diversity. In this respect, it provides for a number of measures including the enactment/reactivation of legislation to provide for the conservation of Uganda's

³³ Republic of Uganda (2008), National Biotechnology and Biosafety Policy, Ministry of Finance, Planning and Economic Development, Kampala, section 3.1.

³⁴ Ibid, section 4.10 (i). In Uganda's context, it is observable that majority of the indigenous crops/species are "orphans."

³⁵ See, *ibid*, (ii and iv) providing for the use of biotechnology in in situ and ex-situ genetic resources and application of information technology to bio-resources development respectively.

³⁶ See Naylor, R., et. al (2004), "Biotechnology in the developing world: a case for increased investments in orphan crops" *Food Policy* 29, pp.15-44.

³⁷ Republic of Uganda (1994), The National Environment Management Policy For Uganda, Ministry of Natural Resources, Kampala.

biodiversity *in its widest sense*.³⁸ As one of the policy guiding principles, it is provided that biodiversity should be considered at species, genetic and ecosystem levels. Although the NEMP does not specifically refer to orphan crops, it is apparent that the generalised nature in which its statements and strategies are worded encompasses orphan crops and their different species. From this perspective, the NEMP therefore provides important opportunities for the conservation of the genetic diversity of Uganda's orphan crops.

The NEMP also calls for the promotion of farming systems and land-use practices that conserve and enhance land productivity in an environmentally sustainable manner.³⁹ As one of the strategies to achieve this objective, it calls for support research to develop farming systems that combine optimum production with land resources conservation and which are compatible with the socio-economic conditions of the target population.⁴⁰ From many angles, these policy statements point to the need to promote orphan crops in national development. First, since most orphan crops require very low inputs like chemical fertilizers and pesticides, it means that they play a very important role in conserving land resources. Second, the call for support research to develop farming systems which are compatible with the socio-economic conditions of target population certainly means promoting orphan crops among the rural poor living in the marginal and fragile environments. This is because, orphan crops are the affordable choice for the rural poor as they do not require many inputs and they are the crops well suited for the marginal and fringe environments where many of Uganda's poorest live.

Another key agricultural-related policy framework which provides some opportunities for promoting orphan crops is the National Agricultural Research Policy. One of the major objectives of this policy framework is "to empower farmers by involving them in identifying and prioritising their research needs and in procuring agricultural research services while technically and professionally guiding them to make informed choices". If all farmers including the very poor rural farmers are effectively empowered, they can then be able to articulate their research needs including those related to the production of orphan crops. This is an important opportunity for the promotion of orphan crops in national development.

In conclusion, although in section 3 of this paper it was concluded that Uganda's agri-food policy architecture is generally not supportive of orphan crops, this section has established that the country's food and agricultural-related policy frameworks provide some opportunities that can be harnessed to promote the production, conservation and use of these crops. The issue is whether or not the country is adequately exploring these opportunities. This is not an issue for this paper to explore. Suffice to point out that stakeholders do not seem to be taking maximum advantage of these opportunities to press Government to support the production, conservation and wider use of orphan crops in national development.

³⁸ Ibid, section 3.4 (ii). Emphasis added.

³⁹ Ibid, section 4.1.

⁴⁰ Ibid, section 4.1 (v).

5. Towards Promoting Orphan Crops in Uganda

In addition to taking advantage of the available opportunities provided for in the different policy instruments as summarised in section 4 above, the following policy measures are recommended to promote and support the conservation, production and wider use of orphan crops in Uganda.

5.1. Invest in Scientific Research and Innovation for Orphan Crops

In promoting orphan crops, one of the key issues is the need to increase investment in scientific research and innovation with respect to these crops. Scientific research and innovation is important in establishing their potential value, improving their production potential as well as the conservation of their genetic resources. Given their importance in national development, orphan crops merit serious investment in terms of scientific research and innovations. To adequately ensure that orphan crops receive the necessary research attention, it is recommended that Government through NARO should establish and adequately fund a special programme to focus on scientific research and innovation for Uganda's orphan crops.

5.2. Maintain and Improve the Public Extension System to Serve the Rural Poor

It was argued that Uganda's policy that calls for a market-focussed and private sector-led agricultural extension and advisory services system cannot serve the needs of the poor farmers in the marginal and fragile areas where most orphan crops are grown. For the important role that orphan crops play in national development, Government should maintain and improve the public agricultural extension system to address the needs of the rural poor who have nurtured and continue to grow these crops.

5.3. Strengthen the Seed System for Orphan Crops

Seed is perhaps the first and most important input into any crop production chain in particular, and agricultural production system in general. In its on-going seed policy development process, the Government of Uganda should address the seed needs of farmers growing orphan crops. Among the measures that government can adopt in this respect include the protection and promotion of farmers' rights to guarantee the farmers' right to save and exchange seed inter alia; strengthen famers' capacities in seed multiplication to improve the quality of seeds produced; and facilitate the development of local seed distribution networks. The policy should also promote the public-private partnership in the provision of improved seed to marginal and isolated agricultural production environments.

5.4. Invest in the Preservation and Protection of Traditional Knowledge

It has been established that many of Uganda's agricultural and food security-related policies are not supportive of orphan crops. In fact, many of them encourage the displacement and replacement of orphan crops with crops that are considered competitive and marketable. In the process, and also as the farmers holding valuable knowledge about these crops continue to die, the traditional knowledge associated with orphan crops is exposed to great danger of continued erosion and disappearance. This is very dangerous for posterity. Traditional knowledge associated with orphan crops is very important not only for the rural farmers who grow these crops, but also in the general scientific research on crop improvement. One major way of preserving and protecting the traditional knowledge associated with orphan crops from disappearance is for Government to invest in its documentation. In this regard, Government should adequately support the Plant Genetic Resources Centre to effectively carry out this important task.

5.5. Include Orphan Crops in the Zonal Agricultural Production, Agro-processing and Marketing Strategy

As a key measure to promote the production and wider use of orphan crops, it is recommended that the Zonal Agricultural Production, Agro-processing and Marketing Strategy be revisited to deliberately bring on board orphan crops. The orphan crops to be included need not meet the full criteria that were used to come up with the selected enterprises. It should suffice that they are considered by the local communities to be very vital in ensuring their food and nutrition security, and providing them with income. It is recommended that in each of the ten zones of production excellence, at least two orphan crops of major food and income security importance should be brought on board to support their production, agro-processing and marketing.

5.6. Include Orphan Crops in the National Export Strategy

To promote the wider use of orphan crops for increased incomes for the rural poor, the National Export Strategy should also be revisited to deliberately include some of Uganda's orphan crops. Initially, the Strategy should aim at stimulating demand and markets for these crops/species and their products in the neighbouring countries where consumers have similar taste. There is already an increasing demand for Uganda's food crops in the neighbouring countries such as Southern Sudan and Kenya. Uganda should therefore seize this opportunity to also market some of its orphan crops.

5.7. Adopt and Implement the Draft National Policy on Plant Genetic Resources for Food and Agriculture

For over two years, the Government of Uganda was engaged in the process of developing a national policy on Plant Genetic Resources for Food and Agriculture (PGRFA). This was largely after the realisation that there were serious policy gaps affecting the conservation and sustainable use of these resources, and the need to fulfil Uganda's international obligations.⁴¹ The national task force that was given the responsibility to consult stakeholders and develop the draft national policy completed its work in late 2008 and submitted the draft policy instrument to the Ministry of Agriculture, Animal Industry and Fisheries (MAAIF). To date, very little has been done to have this draft policy instrument adopted as a national policy.

The Draft National Policy on Plant Genetic Resources for Food and Agriculture has very many good strategies, which, if adopted and effectively implemented, can go a long way in promoting the conservation, development and use of orphan crops. Among these strategies include: surveying and inventorying Uganda's PGRFA including those for orphan crops; development of community gene banks; development of orthodox seed conservation facilities; and development of capacity to assemble neglected, threatened and underutilised species. The strategies also include the development of a *sui generis* legislation for the protection of traditional knowledge relevant to PGRFA; supporting and promoting public awareness about the value of traditional crops and the traditional and indigenous knowledge systems connected to the conservation and sustainable use of PGRFA; adoption of incentive measures to promote crop diversification; and the creation of markets for local varieties and under-utilised species. It is in this regard that Government is called upon to fast-track the process of adopting the national policy on PGRFA.

⁴¹ Under the International Treaty on Plant Genetic Resources for Food and Agriculture for instance, parties thereto including Uganda are required to put in place policy, legal and administrative measures for the conservation and sustainable use of PGRFA.

6. Conclusion

For a very long time, government policy support has been mainly directed at promoting the production and utilisation of major crops. This paper has established that this is still the position with Uganda's current agricultural and food security-related policies and policy frameworks. In spite of the government support and investment in major crops, it has failed to guarantee the food and livelihood security of many Ugandans, especially the rural poor. It is now time for government policy to also focus on the poor peoples' crops – the orphan crops. If given the necessary policy support, orphan crops have great potential to enhance not only the food and nutrition security, but also income generating opportunities, all of which are critical for improving the livelihood security of Uganda's rural poor. This paper has given some of the policy measures which government can undertake to support the conservation, production and wider use of orphan crops.

In promoting orphan crops, it is important for Government to look beyond their economic aspects. The role that these crops play in guaranteeing food and nutrition security of the rural poor who constitute the majority of Uganda's population; their role in maintaining and increasing biodiversity which is critical for sustainable environmental management and agricultural production; adaptability to marginal settings and their ability to stabilize fragile environments are critical considerations in themselves which merit these crops getting more policy support than they are currently being given. In any case, if given the required policy support in the areas of agricultural research, extension, agro-processing and marketing, many of Uganda's orphan crops also have great market potential nationally and internationally. The time is now to guarantee food and livelihood security of our rural poor by investing in their crops.

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Annex: Some of Uganda's Neglected Food Crops

Lango	Sironko	West Nile	Teso
<i>Acalyphabipartita</i>	<i>Afromomumalboviolaceum</i>	<i>Afromomumalboviolaceum</i>	<i>Afromomumlbviolaceum</i>
<i>Amaranthusdubius</i>	<i>Amaranthushybridus</i> subsp. <i>incurvatus</i>	<i>Amaranthus</i> spp.	<i>Amaranthusdubius</i>
<i>Amaranthusgraecizans</i>	<i>Amaranthuslividus</i>	<i>Artocarpusatilis</i>	<i>Anacardiumcuratellifolium</i>
<i>Annonasenegalensis</i>	<i>Armillariamellea</i>	<i>Balanitesaegyptiaca</i>	<i>Asystasiamysorensis</i>
<i>Astystasiamysorensis</i>	<i>Arundinariaalpina</i>	<i>Cajanuscajan</i>	<i>Borassusaethiopum</i>
<i>Borassusaethiopum</i>	<i>Basella alba</i>	<i>Capsicum annum</i>	<i>Capsicum frutescens</i>
<i>Brideliascleroneura</i>	<i>Capsicum annum</i>	<i>Cleome gynandra</i>	<i>Cleome gynandropsis</i>
<i>Cajanascajan</i>	<i>Capsicum frutescens</i>	<i>Cleome monophylla</i>	<i>Cleome hirta</i>
<i>Carisaedulis</i>	<i>Carissa edulis</i>	<i>Clitandracymulosa</i>	<i>Cleome monophylla</i>
<i>Cleome gynandra</i>	<i>Cleome gynandra</i>	<i>Corchorusolitorius</i> (Var. <i>incisifolius</i>)	<i>Cleome rutidosperma</i>
<i>Corchorustridens</i>	<i>Colocasiaesculanta</i>	<i>Crotalaria ochroleuca</i>	<i>Corchorusolitorius</i>
<i>Corchorustrilocularis</i>	<i>Corchorusolitorius</i> ,	<i>Cucumisfigarei</i>	<i>Corchorustridens</i>
<i>Crotalariaochroleuca</i>	<i>Corchorustridens</i>	<i>Cucurbita maxima</i>	<i>Corchorustrilocularis</i>
<i>Cucumisfigarei</i>	<i>Corchorustrilocularis</i>	<i>Guizotiascabra</i>	<i>Curcurbita maxima</i>
<i>Curcurbita maxima</i>	<i>Crotalaria ochroleuca</i>	<i>Hibiscus cannabinus</i>	<i>Cyphostemmaadenocaula</i>
<i>Dioscoreaminutiflora</i>	<i>Cucurbita maxima</i>	<i>Hibiscus esculentus</i>	<i>Hibiscus acetosella</i>
<i>Grewiatrichocarpa</i>	<i>Dioscoreaadoratissima</i>	<i>Hibiscus sabdariffa</i>	<i>Hibiscus callyphyllus</i>
<i>Hibiscus actosella</i>	<i>Dioscoreabulbifera</i>	<i>Hibiscus surattensis</i>	<i>Hibiscus cannabinus</i>
<i>Hibiscus diversifolius</i>	<i>Dioscoreaminutiflora</i>	<i>Hyptisspicigera</i>	<i>Hibiscus dinersifolius</i>
<i>Hibiscuscannabinus</i> ,	<i>Garciniabuchananii</i>	<i>Phaseoluslunatus</i>	<i>Hibiscus surattensis</i>
<i>Hibiscus surattensis</i>	<i>Lentinusprolifer</i>	<i>Tamarindusindica</i>	<i>Impomoeaeriocarpa</i>
<i>Hyptisspicigera</i>	<i>Nymphaea lotus</i>	<i>Termitomyces</i> spp. (<i>IdrikaMaru</i>)	<i>Lycopersiconesulentum</i>
<i>Sesamumcalycinum</i>	<i>Nymphaeanouchalivar. caerulea</i>	<i>Termitomyces</i> spp. (<i>Imburudrika</i>)	<i>Physalis minima</i>
<i>Sidarhombifolia</i>	<i>Phaseoluslunatus</i>	<i>Termitomyces</i> spp. (<i>Aribudri</i>)	<i>Physalisperuviana</i>
<i>Solanumnigrum complex</i>	<i>Sesamumcalycinum</i>	<i>Termitomyces</i> spp. (<i>Alakala</i>)	<i>Polygonumsalicifolium</i>
<i>Sonchusoleraceus</i>	<i>Solanumindicum</i> subsp. <i>distichum</i>	<i>Termitomyces</i> spp. (<i>Nyuyuaedri</i>)	<i>Schkuliapinnata</i>
<i>Strychnosinocua</i>	<i>Solanumnigrum</i>	<i>Termitomyces</i> spp. (<i>Indridrika</i>)	<i>Sesame calycinum</i>
<i>Syzygiumguineense</i>	<i>Tamarindusindica</i>	<i>Termitomyces</i> spp. (<i>Tidrika</i>)	<i>Sidarhombifolia</i>
<i>Tamarindusindica</i>	<i>Termitomycesmicrocapus</i>	<i>Vignaunguiculata</i>	<i>Sonchusoleraceus</i>
<i>Vangueriaapiculata</i>	<i>Urticamassaica</i>	<i>Vitellariaparadoxa</i>	<i>Vignaunguiculata</i>
<i>Vignaunguiculata</i>	<i>Vangueriaapiculata</i>	<i>Vitexdoniana</i>	<i>Vitexdoniana</i>
<i>Vitellariaparadoxa</i>	<i>Vignaunguiculata</i>	<i>Vondzeiasubterranea</i>	
<i>Vitexdoniana</i>	<i>Xanthosomasagittifolium</i>	<i>Ximeneaamericana</i>	

Source: Wasswa M et al (2008)

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ABOUT THE AUTHOR

Dr. Ronald Naluwairo is a Research Fellow with the Advocates Coalition for Development and Environment and Assistant Lecturer at the School of Law, Makerere University. Ronald holds a PhD from the University of London, a Master of Laws degree from Cambridge University, a Bachelor of Laws degree from Makerere University and a Post-Graduate Diploma in Legal Practice from the Law Development Centre. He is a published scholar in the field of agricultural policy and development. Among his published works in this area include: “PROMOTING AGRICULTURE SECTOR GROWTH AND DEVELOPMENT: A Comparative Analysis of Uganda’s Political Party Manifestos”, “IN DEFENSE OF FARMERS’ AND COMMUNITY RIGHTS: Justifying their Inclusion in Uganda’s Plant Variety Protection Legislation”, “Towards a National Policy on Plant Genetic Resources for Food and Agriculture in Uganda: The Need and Justification”, and “Promoting Food Security and Sustainable Agriculture through Facilitated Access to Plant Genetic Resources for Food and Agriculture: Understanding the Multilateral System of Access and Benefit Sharing”. His forthcoming publication in this area critically analyzes the nexus between Uganda’s agriculture, food security and environmental policies and their potential to ensure sustainable food security and natural resource management.

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Advocates Coalition for Development and Environment
(ACODE)

Plot 96, Kanjokya Street, Kamwokya

P. O. Box 29836, Kampala

Tel: +256 312 812150

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